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ABSTRACT

This report describes the results and methods of analysis in a study of reading program costs undertaken as part of a large-scale evaluation of compensatory reading programs. Using a resource approach to program-cost analysis developed for this study, costs were estimated for over 2,000 classes. The cost model provided a convenient and consistent framework for estimating costs and comparing results of reading programs across classes and schools. Analysis of the cost results showed that the costs of reading are related to the kinds of resources available, the program type, and the source of funds. Compensatory reading programs were found to be significantly more expensive per pupil than noncompensatory classes. Significant cost differences were shown to exist between program clusters, particularly regarding the use of staff and equipment resources. (Author/AA)

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UR-231

AN EVALUATION OF THE COST EFFECTIVENESS OF ALTERNATIVE COMPENSATORY READING PROGRAMS

Volume I: Cost Analysis

Final Report in Four Volumes

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Finally, we gratefully acknowledge the assistance provided by the 260 schools involved in the study, especially the personnel in the 100 schools we visited on-site who gave their valuable time to answer our questions.

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SUMMARY

This report describes the results and analysis methods of a comprehensive study of reading program costs undertaken by the RMC Research Corporation. The study was part of a large-scale evaluation of compensatory reading programs conducted by the Educational Testing Service (ETS) for the U. S. Office of Education. The results of this cost analysis study will be combined with the ETS measurement of reading gain in a cost effectiveness analysis of compensatory reading, the objectives of which will be to assess the relative merits of alternative reading programs and to determine the cost-effectiveness of the resources used in compensatory reading. The cost analysis study described in this report was designed to meet the objectives of the cost-effectiveness analysis within the framework of the ETS evaluation study design.

The focus of the cost analysis was toward program comparisons across schools for broad policy evaluation and review. It was not specifically designed for decision-making at the individual school or district level. This focus required an analysis of all resources used in a school reading program, regardless of when or for what purpose the resources were originally purchased, or the source of funds used for their purchase.

The ETS evaluation study involved a comprehensive examination of reading programs in approximately 260 public elementary schools around the nation during the 1972/1973 school year. Of this total, approximately 100 schools had compensatory reading programs funded by Title I, 100 had compensatory reading programs funded

from sources other than Title I, and 30 had no identified compensatory reading programs. The remaining schools, approximately 30, were included because they were considered exemplary programs. In each school, all the students in the second, fourth, and sixth grades were given special pre- and post-tests to determine their reading achievement and changes in their attitudes during the school year. Detailed attendance records were kept of their participation in particular reading classes. In addition, the principal and all teachers of students in the affected grades completed questionnaires describing the demographic characteristics of the students and discussing their own techniques and approaches to teaching. Finally, the principal completed a questionnaire identifying and enumerating all the resources employed in his school. From these data, ETS defined 12 program clusters: ten for compensatory programs, one for nonclassifiable compensatory programs and one for schools with no compensatory programs.

HIGHLIGHTS OF STUDY DESIGN AND RESULTS

As described later, the organization of the cost analysis effort was cast in the framework of a reading program cost model, which can be summarized with the following technical features:

- uses a resource approach to costing,
- examines total program costs for all reading program resources,
- uses standardized costs,
- costs of capital resources are amortized over useful life, and
- costs are expressed in constant 1973 prices.

The outputs of the cost model are presented in two formats--one for total school reading program costs and the other for class level costs. The following outputs are derived for each format:

I. School Reading Program (all grades)
    A. Total School Resources
    B. School Reading Resources

    C. School Reading Costs by Resource Item
    D. School Reading Costs by Program Tasks

II. Class Level Costs (Grades 2, 4, and 6)

    A. Total Annualized Costs by Resource Item

School reading costs are computed as total costs by resource item and as a cost-per-student for all reading resources. The class level costs are presented as total annualized cost-per-student by resource item. Average program costs (for Grades 2, 4, and 6) were derived for each school from the class level costs. Statistical analyses of the reading program costs across schools and classes (using cost-per-student estimates) led to the following general conclusions and results:

- costs of compensatory programs are about 50 percent higher than reading programs in schools with no compensatory reading programs,
- costs of compensatory programs are also 50 percent higher than developmental programs (i.e., noncompensatory classes) in the same school,
- costs of compensatory programs in Title I schools are 85 percent higher than non-Title I compensatory programs,
- costs of developmental programs in Title I schools are not significantly higher than developmental programs in schools with non-Title I developmental programs,
- variation of reading program costs between schools is higher than between classes within schools, and
- cost variation between program clusters is statistically significant.

The results tend to show significant cost differences between compensatory reading programs and between clusters of reading programs as defined by ETS. These findings are most promising and offer strong potential for conducting meaningful and statistically significant studies of reading program cost-effectiveness.

A RESOURCE APPROACH TO PROGRAM COST ANALYSIS

Typically, studies of education programs use budget reports as a primary data source in estimating costs. However, there are numerous pitfalls and limitations of budgetary data. For the most part, school districts' budgets do not separate costs by education programs or individual classrooms within a school. To use district-wide budget costs as an estimate of cost implies that resources are used uniformly throughout a school or district. Unfortunately, this implicit assumption is usually not correct. Education programs quite often concentrate school resources in an effort to assist a small target population. Average program costs based on budget data tend to obscure the true cost of these concentrated resources. In addition, the use of budgetary cost data neglects the value of resources inherited from past years' expenditures. Budget costs can also distort the evaluation of program costs by including one-time capital expenses in the estimates.

For these reasons the costing procedure in this study avoids the direct use of budget data. Instead, we developed a resource approach to cost analysis to provide a more accurate and consistent procedure for estimating reading program costs. The approach is based on a rigorous assessment of the resources required for school and class level reading programs. Specific inventories and utilization rates were determined for the various levels of services for each of the major resource items. Resources were separated into the following major categories:

- staff,
- equipment,
- materials and supplies,
- facilities, and
- district services.

Because the procedure enumerates the resources for each program separately, it allows for a more precise examination of the impact on cost of differential uses and mix of resources. In addition, because it considers all resources independent of when they were acquired, it allows examination of inherited resources.

The cost analysis explicitly addresses the problem of "shared" resources, i.e., those resources not used exclusively by one program or class. In actual practice, exclusive use is rare. Generally, resources are shared by a variety of classes or programs, e.g., classroom teachers providing instruction in more than one subject area, or equipment shared by all teachers in a school.

In developing the reading cost model, a number of technical and conceptual issues were confronted regarding the use and definition of resource costs. The issues included the use of total vs incremental costs, the identification of both capital and annual operating cost, and the use of actual vs standard costs. A brief discussion of these issues is provided below.

Total vs Incremental Cost

Costs of individual reading programs can be investigated in two distinct ways. The first is referred to as total program costs. Included in this definition are the the total expenditures, both past and present, for all resources used in a program. Both capital and annual operating expenses are included. Total program costs also include the cost of resources available within a district or assets inherited from discontinued programs which can be used in the reading program. Total program cost is the most appropriate format for comparing alternative program costs, and is the format used in this report.

Incremental program costs, on the other hand, measure only the additional costs required by a district to implement a reading program. Costs for inherited assets or donated resources are disregarded and treated as free goods. Economists refer to these as "sunk" costs. Incremental cost is best used in deciding whether or not a particular program should be implemented in a specific district, and is appropriate for making comparisons of alternative reading programs at this level. It is not appropriate, however, for comparing programs across schools or school districts.

Capital and Annual Operating Cost

For all elements of the reading program, costs were separated into two categories: capital investment and annual operating expenses. Capital costs are one-time expenditures for the initial implementation of a reading program. These include costs for new facilities, equipment, materials, and initial staff training. If a program is totally new (such as a demonstration project), the capital costs might also include one-time expenditures for program design and development of materials. For this study, however, we disregarded program development costs. Rather we have estimated the costs of fully operational programs.

Annual operating expenses are the costs needed each year to operate and maintain a reading program according to its initial design. They include the expenses for salaries, in-service training, materials and supplies, equipment maintenance, facilities operations and maintenance, and other services related to the reading program.

The primary distinction between the two categories is the length of time from which benefits are derived from each type of expenditure. Capital resources last many years, while annual expenditures (by definition) are consumed in less than one year. To facilitate making cost-effectiveness comparisons of alternative reading programs, we need to combine the two costs into a single value.

The best procedure for making the two costs comparable is to convert the capital investment costs into a series of uniform annual expenditures. Capital costs are "amortized" over their useful life using the following formula:

$$\begin{array}{c}\text{Equivalent}\\\text{Annual Cost}\end{array} = \begin{array}{c}\text{Capital}\\\text{Cost}\end{array} \times \begin{array}{c}\text{Capital}\\\text{Recovery Factor}\\\text{(CRF)}\end{array}$$

where $CRF = i(1+i)^n/(1+i)^n - 1$

n = useful life

i = discount rate.

In the reading cost model, the annualized capital costs were computed in this manner and were combined with the other annual operating expenses to give total annualized program costs.

Actual vs Standard Costs

The final issue involved a choice between using the actual cost of a resource at each school, or a "standardized" cost. The actual cost is the cost the school actually paid for a resource. Actual costs require the use of separate teacher salary schedules for each school district, and specific prices for individual equipment and facility costs. For the same resource, actual costs will vary from school to school depending on local salary levels and economic conditions. Standard costs, on the other hand, are based on national averages and eliminate the local and regional variations in cost.

It is important that local administrators know the actual cost of a program, particularly with regard to the actual incremental cost of the program, because this represents the cost to the school district to institute a program. However, on a national scale actual costs tend to obscure the comparison of alternative school reading programs because of the influence of local variation in the cost. For this reason, standardized costs were in the reading cost model. However, there is no limitation within the cost model design about the type of cost, either actual or standard, which must be used.

READING PROGRAM COST MODEL

The resources used in a reading program were separated into five categories: staff, facilities, equipment, material, and district centers. For each of the resource items within these categories, the reading program cost model was designed to estimate the quantity available for reading in each school and each reading class. Using unit cost factors for each resource item, the model then calculates the total cost of employing the resource for reading. In this study, unit cost was defined to represent the cost of a single unit of the resource, for example, one tape recorder.

The basic procedure used in the model is presented in Figure 1. It consists of four submodels and a series of data inputs and outputs.

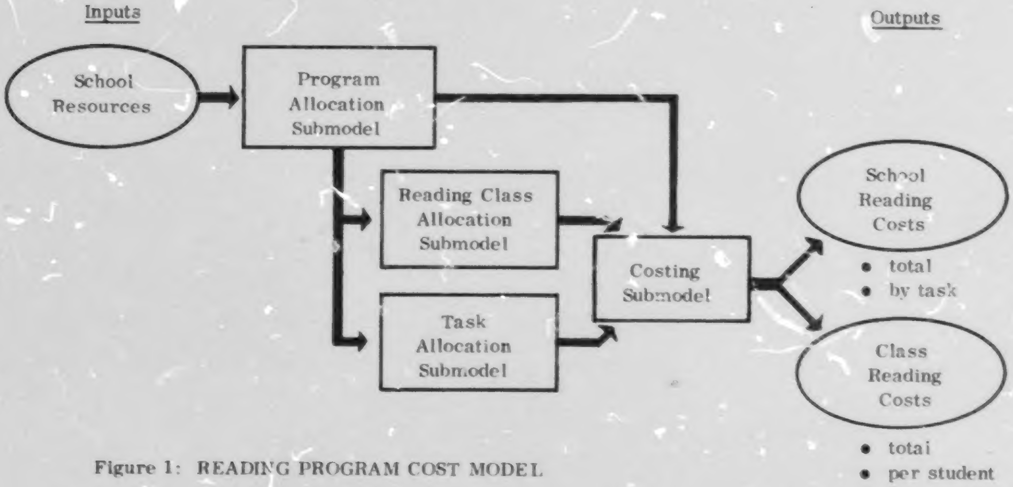
Inputs
Outputs
School Resources
Program Allocation Submodel
Reading Class Allocation Submodel
Task Allocation Submodel
Costing Submodel
School Reading Costs
• total
• by task
Class Reading Costs
• total
• per student

Figure 1: READING PROGRAM COST MODEL

A total of 94 different kinds of school resources were examined in the reading cost study. For each of the resource items, the following parameters were calculated:

- school quantity,
- program factors,
- reading class factors,
- task factors, and
- unit costs.

The calculation for two of these inputs is relatively straightforward. The school quantity is determined directly from a special resource survey questionnaire, and the unit costs are standardized for all schools based on the data collected at selected schools or from other national sources. The remaining three parameters are more complicated and depend on how the resources are divided between subject areas and classrooms. Using these five parameters as inputs, the model is operated in successive steps to derive estimates of the quantity and costs of each reading program resource at the various levels of analysis shown on Figure 1. The results of these successive operations are aggregated to total school reading costs, reading class costs, and task costs.

Program Allocation Submodel

The program allocation submodel is used to estimate the quantity of each resource that is employed for reading in a school. The model utilizes as inputs the total quantity of resources available in a school and a series of program factors. The program factors represent the proportion of time that a resource is used by the school in reading, rather than in other subject areas. The product of these two inputs is the estimate of the quantity of resources available in a school for reading.

The procedure for calculating program factors varies according to the type of resource being examined. Staff program factors are calculated either proportional to time spent in reading, proportional to an average teacher factor, or fully dedicated (i.e., factor equals 1.00). All facilities and equipment program factors are proportional to time used in reading. The factors for materials and supplies are either fully dedicated or proportional to time in reading. For district services only the reading related costs were estimated; thus, the program factors are fully dedicated.

Reading Class Allocation Submodel

For purposes of estimating costs, a reading class is defined as any group of students for which a separate attendance record is kept. Reading classes are generally conventional classrooms, but may also include small groups of students taught by a reading specialist if attendance was taken.

The reading class allocation submodel is used to estimate the quantity of resources actually employed in each reading class. The submodel utilizes as inputs the quantity of school reading resources, determined by the program allocation submodel and a series of reading class factors. The product of these two inputs is an estimate of the quantity of resources available for reading in each reading class. Thus, the reading class allocation submodel divides school reading resources among all classes in the school where reading is taught. Although only the resources used in the reading classes in the second, fourth, and sixth grades are tabulated by this submodel, all reading classes in the schools are considered in the calculations.

The reading class factors define the proportion of time that a shared resource is used in each reading class. The calculation of this factor varies with different resources. Class allocation factors for staff resources are either fully dedicated to each class, proportional to the number of students, proportional to their use by classroom teachers, or allocated uniformly. The allocation factors for facilities are assumed identical to the classroom teacher factors. Equipment, materials, and district services are allocated based on a derived measure of use factor, or in some cases, a uniform use factor.

Task Allocation Submodel

The majority of the resources used in a school for reading are used for actual instructional purposes. There are other functions (which we call reading tasks) which are necessary to properly support any reading program. We define these additional tasks to include the diagnosis of student reading problems, in-service training for reading staff, and program planning administration. The emphasis given by various schools to each of these tasks may prove important in future cost-effectiveness analyses.

The task allocation submodel is used to evaluate the relative emphasis given to each task. It utilizes as inputs the quantity of school reading resources determined by the program allocation submodel and specific task factors for each resource category. The task factors measure the proportion of time a resource is used in a particular task in reading. The product of these two inputs is an estimate of the quantity of resources employed for each task.

Costing Submodel and Model Outputs

The costing submodel performs the final operation of the reading program cost model. It is used to calculate the capital and annual operating costs associated with the quantity of resources resulting from the other three submodels.

The costing submodel employs unit cost inputs for each resource and calculates the cost of the various school, class, and task resources used in reading programs. As defined previously, a unit cost is the cost for one unit of resource. Unit costs include the capital cost component (i. e., the nonrecurring cost to acquire the resource) and operating cost components (i. e., the annual recurring cost).

This submodel also produces all the cost model output reports. Tables 1 and 2 are examples of two outputs produced for each school reading program. The first format lists the school resources available to the reading program in all classes and grades and the quantity (i. e., proportion) of each resource which is actually used for reading. The capital costs and annual operating costs for these resources are shown along with the allocation to reading tasks. Costs for up to 18 minor resource categories and five major categories are presented. Of course, not all resources are used in every school. The second output format presents cost-per-student

Table 1

EXAMPLE OUTPUT: SCHOOL READING PROGRAM COSTS FOR ALL GRADES
(1973 dollars)

SCHOOL: 937
PROGRAM CLUSTER: 2
FUNDING SOURCE: NO TITLE I
NUMBER OF STUDENTS: 1052

RESOURCE	----QUANTITY----		------READING PROGRAM COST--------				------ANNUALIZED COST BY TASK-----			
	SCHOOL TOTAL	READING TOTAL	CAPITAL INVEST.	OPERAT.	ANNUALIZ COST	% OF TOTAL	INSTRUCT	DIAGNOST	STAFF DEVELOP	ADMIN
CLASSROOM TEACHER	36.00	4.06	.00	48560.93	48560.93	49.6	33908.35	7266.07	120.43	7266.07
READING SPECIALIST	3.00	1.80	.00	22005.00	22005.00	22.5	6365.62	6146.12	6200.69	3292.56
OTHER SPECIAL TEACHER	.83	.11	.00	1365.35	1365.35	1.4	340.49	.00	71.48	953.37
NON-TEACHING ACADEMIC STAFF	.76	.05	.00	880.22	880.22	.9	.00	790.23	46.08	43.90
NON-TEACHING NON-ACADEM. STAFF	1.43	.11	.00	426.58	426.58	.4	.00	.00	1.06	425.52
SUPERVISION AND COORD. STAFF	1.09	.20	.00	3789.26	3789.26	3.9	179.71	359.41	467.76	2782.36
STAFF SUBTOTAL	43.11	6.33	.00	77027.34	77027.34	78.7	40794.17	14561.83	6907.50	14763.78
FACILITY SUBTOTAL	23.00	2.59	142451.19	3703.58	14700.81	15.0	9555.52	1470.08	1470.08	2205.12
TEACHING MACHINES	2.00	2.00	452.30	35.48	99.89	.1	89.90	9.99	.00	.00
COMPUTER	1.00	1.00	1500.00	267.71	481.31	.5	385.05	96.26	.00	.00
TELEVISION/VIDEO TAPE PLAYERS	4.00	1.00	204.66	30.69	59.83	.1	59.83	.00	.00	.00
EQUIPMENT SUBTOTAL	7.00	4.00	2156.96	333.88	641.03	.7	534.78	106.25	.00	.00
BASAL READERS	600.00	600.00	3024.00	300.00	730.62	.7	657.56	73.06	.00	.00
INDIVIDUAL READING KITS	6.00	6.00	17.58	1.74	4.24	.0	3.39	.85	.00	.00
LIBRARY BOOKS	3000.00	3000.00	11250.00	1140.00	2375.40	2.4	2375.40	.00	.00	.00
OTHER SUPPLIES AND MATERIALS	1052.00	118.67	.00	811.92	811.92	.8	811.92	.00	.00	.00
MATERIALS SUBTOTAL			14291.58	2253.66	3922.18	4.0	3848.27	73.91	.00	.00
RESOURCE RELATED CENTER			.00	1598.00	1598.00	1.6	799.00	.00	.00	799.00
DISTRICT CENTERS SUBTOTAL			.00	1598.00	1598.00	1.6	799.00	.00	.00	799.00
TOTAL COST			158899.73	84916.46	97889.36	100.0	55531.74	16212.07	8377.58	17767.90
COST PER STUDENT			151.05	80.72	93.05		52.79	15.41	7.96	16.89

Table 2

EXAMPLE OUTPUT: READING PROGRAM COSTS BY CLASS
(1973 dollars)

SCHOOL: 937
PROGRAM CLUSTER: 2
FUNDING SOURCE: NO TITLE I

AVERAGE COST PER STUDENT
FOR CLASSES WHERE TEACHERS
COMPLETED QUESTIONNAIRES

CLASS:	22	24	26	28	29	44	46	47	48	64	65	68
TYPE:	1	1	1	1	1	1	1	1	1	1	1	1
NUMBER OF STUDENTS:	27	28	27	30	28	30	28	31	28	28	28	29
COMPENSATORY (YES OR NO)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RESOURCE												
CLASS INSTRUCTOR	56.18	47.20	.00	63.49	31.62	56.12	68.02	42.63	23.92	59.63	68.02	4.98
READING SPECIALIST	20.92	20.92	20.92	20.91	20.92	20.91	20.92	20.91	20.92	20.92	20.92	20.92
OTHER SPECIAL TEACHER	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29
NON-TEACHING ACADEMIC STAFF	.72	.27	.28	.25	.00	.00	.69	1.25	.69	.13	.69	1.34
NON-TEACHING NON-ACADEM. STAFF	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
SUPERVISION AND COORD. STAFF	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
STAFF SUBTOTAL	83.11	73.68	26.49	89.94	57.83	82.32	94.92	70.08	50.82	85.97	94.92	32.53
FACILITY SUBTOTAL	27.86	20.20	20.94	31.48	13.53	20.92	33.73	18.24	13.53	33.73	33.73	2.53
TEACHING MACHINES	.16	.00	.00	.14	.00	.00	.00	.00	.15	.00	.00	.15
COMPUTER	.78	.00	.00	.70	.00	.00	.00	.00	.75	.00	.00	.73
TELEVISION/VIDEO TAPE PLAYERS	.04	.00	.04	.08	.00	.04	.04	.04	.04	.00	.08	.04
EQUIPMENT SUBTOTAL	.98	.00	.04	.92	.00	.04	.04	.04	.94	.00	.08	.92
BASAL READERS	.87	.42	.87	.39	.84	.78	.42	.37	.00	.84	.08	.08
INDIVIDUAL READING KITS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
LIBRARY BOOKS	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
OTHER SUPPLIES AND MATERIALS	.77	.77	.77	.77	.77	.77	.77	.77	.77	.77	.77	.77
MATERIALS SUBTOTAL	3.89	3.44	3.89	3.41	3.86	3.80	3.44	3.39	3.02	3.86	3.10	3.10
RESOURCE RELATED CENTER	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
DISTRICT CENTERS SUBTOTAL	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
TOTAL COST	117.35	98.83	52.87	127.26	76.73	108.59	133.64	93.26	69.82	125.07	133.34	40.59

estimates for all classes in Grades 2, 4, and 6 participating in the ETS study. Both compensatory and developmental (i.e., noncompensatory) classes are included in this output report.

DATA COLLECTION

Analyzing reading program costs and developing and calibrating the cost model involved an extensive data collection effort. Data were collected from four primary sources: (1) resource questionnaire, (2) site visit reports, (3) program questionnaire, and (4) secondary data sources.

The resource questionnaire, mailed to the principals in all schools in the sample, was designed to collect specific information about the number and type of resources at each school and how each is used in reading instructions. It addressed only those areas related to resource requirements, i.e., number of staff, type of staff, equipment inventory, materials used, etc. It did not solicit any information about costs. A response rate of about 97 percent was obtained from the resource questionnaire.

Actual site visits were made to a sample of 100 schools to collect detailed cost and program data relevant to the school reading programs. The cost data collected from these schools were used to derive standard cost factors for computing program costs for all 260 schools. Cost were collected for direct resource items and for all indirect activities and district services that support school reading programs.

Program data were obtained from two ETS questionnaires--a program characteristics questionnaire and a teacher characteristics questionnaire. Both were sent to all teachers involved in the study and were the primary data sources for estimating class level costs. Specific data utilized from these questionnaires included information about the amount of time spent in reading, use of specific equipment, and the teachers' experience and academic degrees. In addition to these questionnaires, student attendance records kept by these teachers were used to identify the reading specialists in the school.

The final source of cost data was from secondary sources including reports, price catalogues, and national publications. These were particularly useful in preparing the detailed cost estimates for specialized staff personnel, equipment, and reading materials.

CONCLUSIONS

The resource approach to program cost analysis developed for this study proved to be a useful and workable procedure for estimating school reading costs. Costs were estimated for over 2,000 classes participating in the ETS study of compensatory reading. The cost model provided a convenient and consistent framework for estimating costs and comparing results of reading programs across classes and schools. Analysis of the cost results showed that the costs of reading are related to the kinds of resources available, the program type, and source of funds. Compensatory reading programs were found to be significantly more expensive per pupil than noncompensatory classes. Significant cost differences were shown to exist between program clusters, particularly regarding the use of staff and equipment resources.

Although the cost model was designed specifically for reading programs, the approach and model could be used for a variety of applications. The model framework is very flexible and could easily be adapted to other education program evaluations or studies of costs at the school or school district level.

1

INTRODUCTION

SCOPE AND STUDY OBJECTIVES

This report presents the results of a detailed study of reading program costs at selected elementary schools throughout the country. The cost analysis study was designed to complement and support a large-scale evaluation of compensatory reading programs being conducted by the Educational Testing Service (ETS) for the U.S. Office of Education. The results of the two studies--i.e., the program costs and observed program outcomes--will be integrated by RMC into a cost effectiveness evaluation to determine the relative merits of alternative compensatory reading programs. Thus, this report can be viewed as an interim product leading to the eventual cost effectiveness analysis of compensatory reading programs.

However, the cost analysis study by itself has useful outputs. It can give education planners valuable insights about the resources needed for compensatory reading programs and their relative costs. In addition, we feel that the approach taken by RMC in the analysis of reading program costs is unique and offers a consistent framework for analysis that could be adopted in other program evaluations. For these reasons, we are reporting the results of the cost analysis study as a separate report.

Background of ETS Study

In July 1971, ETS began a survey of public elementary schools and selected features of their reading instruction. The study has three phases. The first phase has been completed and involved a descriptive and analytical study of reading programs in grades two, four, and six in over 700 schools throughout the U. S. Phase II includes a comprehensive evaluation of the programs for a sample of these schools for the 1972-1973 school year. The goal is to determine how students benefit from various reading methods and categories of instruction. ETS has completed all the pretest and posttest measurements and other data collection activities for Phase II. The analysis and evaluation of these data are currently underway. Phase III of the ETS study involves the evaluation of special summer compensatory reading programs at 27 selected schools.

The cost analysis presented in this report deals with the Phase II portion of the ETS study. The evaluation is based on a sample of approximately 260 schools, 100 with compensatory reading programs funded by Title I, 100 with compensatory programs funded by sources other than Title I, and the remainder with no compensatory reading programs. ETS used a number of instruments for recording the necessary data and descriptions of the schools and the reading programs. The instruments included standardized tests to determine reading achievement and student attitudes toward reading, class attendance records, and principal and teacher questionnaires for collecting program and demographic characteristics. ETS used these data with factor analysis methods to classify school and classroom reading instruction into twelve program clusters. Ten clusters were defined for compensatory reading programs, one "conglomerate" cluster for non-classifiable compensatory programs, and one cluster for all non-compensatory schools.

While questions were asked about the types of resources (staff, equipment, facilities, and materials) used in the reading programs, no attempt was made to quantify the amount of resources available to the teachers. For this reason, in October 1972, ETS selected RMC to develop a supplemental resource survey and to actually conduct the cost analysis and cost effectiveness evaluations for the Phase II study. The cost analysis effort presented in this report was initiated, therefore, in the framework of an ongoing research study, and utilizes much of the data already collected by ETS.

Objectives of Cost Analysis Study

The cost analysis research plan was designed to meet the broader objectives and needs of the cost effectiveness evaluation that will follow. The two primary objectives for this purpose are as follow:

- to assess the relative cost effectiveness of alternative compensatory reading programs
- to determine the relative cost effectiveness of the resources used in compensatory reading.

The focus of the first objective is to identify the costs of reading programs in a way that highlights program comparisons and differences in resource requirements. The cost effectiveness study is oriented toward basic policy questions of nationwide scope and review; it is not intended to support program analysis and implementation studies at the local or school district level. This broad focus on program comparisons requires that the costs of all resources used in the compensatory reading programs be examined and not just those resources purchased new for the program. Likewise, the source of program funds is not of importance to this evaluation.

It should be noted that this policy orientation of the cost effectiveness study does not preclude using the cost results to analyze individual programs. However, the analysis at this level would require specification of resources already on hand and not being used in the school. These resource costs would then be subtracted from total program costs. Clearly, the relative costs and cost effectiveness of alternative reading programs for an individual school or school district could be significantly changed on the basis of using inherited resources.

The second objective of the cost effectiveness study addresses the question of the relative worth of resources used in compensatory reading programs. Are teaching machines cost effective relative to increased use of teacher aides? What is the relative cost effectiveness of using teacher aides versus reducing the size of the reading class? To examine questions of this type requires that all teaching related resources be identified in terms of their quality, quantity, availability, use, and dollar costs. The resource list must include both items used exclusively by each program or class and those which are shared. The important requirement is to identify and quantify the characteristics of all resources available and used in reading.

Organization of Report

The following section of this chapter addresses some of the issues and technical details involved in the preparation of the reading program cost analysis. This leads to a summary of the characteristics of the reading program cost model and an overview of the data collection procedures used in preparing the reading cost estimates.

Chapter 2 describes the structure and analytic framework of the cost model developed by RMC for estimating reading program costs. This is followed by a description in Chapter 3 of how the cost factors and unit price data were derived. Chapter 4 presents summary results of the cost model outputs and identifies key variables and assumptions that were made. The last chapter presents general conclusions and recommendations of the cost results, with particular attention given to methods for improving the study design and cost analysis procedures in the future.

Detailed descriptions of the data collection instruments, the cost model design, and cost estimates for each school in the Phase II sample are presented as appendices to the main report.

PRINCIPLES OF COST

A number of technical and conceptual issues were confronted in the course of developing cost estimates for the Phase II reading programs. We have already mentioned the scope of the Phase II study and the more than 260 schools being examined. In addition, there was a need for flexibility to permit cost analyses to be conducted at various levels of detail (e.g., by school and at the class level) depending on the findings of the effectiveness study. Other issues involved defining meaningful cost categories, use of total vs incremental costs, use of budget data, standardized costs, treatment of capital costs, and the impact of time differences. A brief discussion of these issues and our approach to dealing with them in the design of the cost model and data collection instruments are given below.

Level of Detail

A primary consideration in developing the cost analysis framework was defining the level of detail for analyzing reading program costs. Of course, this decision had to be coordinated with the effectiveness analysis being conducted by ETS. The strategy adopted by ETS was to maintain a flexible approach which would permit evaluations to be made at various levels of detail. The ETS data will permit program comparisons at the school and class levels and even by individual students.

It was therefore decided to design the cost estimating model with the same level of flexibility adopted by ETS for the effectiveness measurement. The class level was selected as the basic unit of analysis for the cost study. The individual class costs are based on the specific program characteristics for each class and the resources used in reading instruction. At the class level, clear differences in the use and availability of teaching resources can be observed. This level also highlights cost differences between compensatory reading classes and non-compensatory (i.e., developmental) classes in the same school. Total costs are computed for each class in the second, fourth, and sixth grades participating in the ETS evaluation. Average cost-per-student figures are also computed for each class and can be used for the cost effectiveness analysis at the individual student level. Conversely, class level costs are aggregated to school totals for making cost effectiveness evaluations of reading programs across the 260-school sample.

Cost Categories

For all elements of the reading program, costs are separated into two categories:

- capital investment, and
- annual operating expenses.

Capital costs are one-time expenditures needed for the initial implementation of a reading program. These include costs for new facilities, equipment, materials, and initial staff training. If a program is totally new (such as a demonstration project), the capital costs might also include one-time expenditures for program design and development of materials. For this study, however, we have disregarded program development costs. Rather, we have estimated the costs of fully operational programs.

Annual operating expenses are the costs needed each year to operate and maintain a reading program according to its initial design. They include the expenses for salaries, in-service training, materials and supplies, equipment maintenance, facilities operations and maintenance, and other services related to the reading program. These two broad categories of cost--capital investment and annual operations--are used as the basis for organizing the cost elements of school and class level reading programs.

Total vs Incremental Cost

Costs of individual reading programs can be investigated in two distinct ways. The first is referred to as total program costs. Included in this definition are the total expenditures, both past and present, for all resources used in a program. Both capital and annual operating expenses are included. Total program costs also include the cost of resources available within a district or assets inherited from discontinued programs which can be used in the reading program. Sue Haggart of the RAND Corporation refers to this cost as the comparable replication cost.[1] Total program cost is the most appropriate format for comparing alternative program costs for basic policy evaluations, and is the format used in this report.

Incremental program costs, on the other hand, measure only the additional costs required by a district to implement a reading program. Costs for inherited assets or donated resources are disregarded and treated as free goods. Economists refer to these as "sunk" costs. Incremental costs are important in deciding whether or not a particular program should be implemented in a specific district. Inherited resources are extremely important at this level of analysis and can change the relative cost or cost-effectiveness of alternative reading programs for a specific school or school district.

Use and Limitations of Budget Costs

Typically, studies of education programs use budget reports as a primary source in estimating costs. However, there are numerous pitfalls and limitations of budgetary data. For the most part, school districts' budgets do not separate costs by education programs. In addition, budgets are typically not broken out by school, and never by individual class. Even in cases where budget costs are identified by program, there is no assurance that program costs in different districts are computed in a comparable way. Different accounting procedures and cost allocation rules tend to create artificial cost differences.

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[1] Sue A. Haggart, "Program Cost Analysis in Educational Planning," The RAND Corporation, P-4744, December 1971.

Another major limitation to using budget data for costing purposes arises from what budgets do not report. First, a program may utilize facilities and equipment purchased several years in the past and the costs for these resources will not appear in current budget reports. Likewise, salary for release time for teachers participating in training programs will not show up in budget reports as part of the reading program. The same is true for informal in-service training given by other members of the teaching staff.

It is for these variety of reasons that the costing procedure used in this study avoids the direct use of budget data. Instead, we developed a resource approach to cost analysis to provide a more accurate and consistent procedure for estimating reading program costs. This is described in the following section.

Resource Approach to Cost Analysis

Because reading program costs are needed at a level of detail not available in school budget reports, RMC developed a resource approach for conducting the cost analysis. The approach is based on a rigorous assessment of the resources required for school and class level reading programs. Specific inventories and utilization rates are determined for the various levels of services for each of the major resource items. Resources are separated into the following major categories:

- staff,
- equipment,
- materials and supplies,
- facilities, and
- district services.

Information about the program resources and their utilization is collected by means of questionnaires to the school principals and class teachers and a number of site visits. Utilization rates for each resource are specified separately by reading program tasks--i.e., instruction, diagnosis, staff training, and administration. The procedures for computing these resource requirements are described in later sections of the report. In many cases, generalized relationships are derived from school data to express resource inventory requirements as a function of basic program characteristics. This approach is especially useful for estimating facility space requirements where actual data or planning standards were not available.

Having prepared detailed specifications of the resources used in school and classroom reading programs, the costs of the resources are then determined. Both capital investment and annual operating costs are estimated for all resource categories except staff costs, which are assumed to be entirely operating expenses. Cost estimating relationships and unit cost factors are used for translating the resource requirements into dollar costs. The procedure for deriving the cost relationships and factor prices used in the cost model are presented in Chapter 3.

Actual vs Standard Costs

Another issue involves the choice between using actual resource costs at each school or a "standardized" cost. Actual costs require the use of separate teacher salary schedules for each school district and specific price levels for individual equipment and facility costs. It is obvious that the actual costs for similar resources will vary from one school district to another because of local salary levels and economic conditions. Actual costs are useful in estimating incremental program costs in a specific district; however, they tend to obscure the comparison of alternative school reading programs, and are not used in the outputs in this report.

With standard costs, the same dollar cost is charged for all resources of the same type and quality. Thus, the same unit cost is used for identical equipment items, or teachers with the same background and experience, or the same reading kit, etc. Standard costs are based on national averages and eliminate the local and regional variations in cost. By eliminating these local variances from the reading program cost estimates, the task of comparing alternative reading programs and isolating meaningful cost effectiveness relationships will be simplified. For this reason, the cost model in this report is developed using standard cost factors based on the data collected from site visits to individual schools and from other nationwide data sources.

Treatment of Capital Costs

In an earlier section, we described the difference between capital costs and annual operating expenses. The primary distinction between the two categories is the length of time benefits are derived from each type of expenditure. Capital resources last many years, while annual expenditures (by definition) are consumed in less than one year. To facilitate making cost effectiveness comparisons of alternative reading programs, we need to combine the two costs into a single value.

The best procedure for making the two costs comparable is to convert the capital investment costs into a series of uniform annual expenditures. Capital costs are "amortized" over their useful life using the following formula:

$$\begin{matrix}\text{Equivalent} \\ \text{Annual Cost}\end{matrix} = \begin{matrix}\text{Capital} \\ \text{Cost}\end{matrix} \times \begin{matrix}\text{Capital} \\ \text{Recovery Factor}\end{matrix} \qquad (1\text{-}1)$$

where $\text{CRF} = i(1+i)^n/(1+i)^n - 1$

n = useful life
i = discount rate.

The annualized capital costs computed in this manner can be combined with the other annual operating expenses to give total annualized program costs. The advantages of amortized costs must be weighed against the need to estimate useful lives and discount rates. However, there are accepted procedures for making estimates for these values, which we describe later in this report.

Constant vs. Current Year Costs

Since the costs for a reading program extends over several years, we must make some adjustment for price level changes. It is obvious that the costs for facilities and equipment purchased 5 to 10 years ago do not reflect current prices for the same type resources. To deal with the problem of mixing historical costs for prior year expenditures, all cost factors and unit costs are adjusted to constant 1973 prices. This requires using a price level index for the capital resources used in reading programs.

SUMMARY OF COST MODEL DESIGN

The overall organization of the cost analysis effort is cast in the framework of a reading program cost model. This is described in detail in Chapter 2. The analytic framework for the model design was developed with full consideration of the issues and technical concepts discussed previously.

The design of the cost model can be summarized with the following technical features:

- uses a resource approach to costing,
- estimates are total program costs for all reading program resources,
- uses standardized costs,
- costs of capital resources are amortized over useful life, and
- costs are expressed in constant 1973 prices.

The outputs of the reading program cost model are presented in two formats. One describes the total school reading program, the other presents class level costs. The following outputs are derived for each format:

I. School Reading Program
  - Total School Resources
  - School Reading Resources
  - School Reading Costs by Resource Item
  - School Reading Costs by Program Tasks

II. Class Reading Program
  - Total Annualized Costs by Resource Item

School reading costs are presented as total costs by cost category (capital, operations, and total annualized cost) for each resource item and as cost-per-student for each cost category. The class level costs are presented as total annualized cost-per-student by resource item. Sample outputs of the reading program cost model and numerous summary tables of the reading program costs are presented in Chapter 4 and Appendix E.

OVERVIEW OF DATA COLLECTION PROCEDURE

This section briefly describes the data collection instruments and field work undertaken by RMC to collect the resource and cost data for the Phase II cost study. A more complete description of the data collection procedures is presented in Appendix A.

The analysis of reading program costs involved data from four primary sources:

1. RMC Resource Questionnaire,
2. RMC site visit reports,
3. ETS program data, and
4. Secondary data sources.

The Resource Questionnaire was mailed to the principals (or ETS reading coordinators) in all schools in the Phase II sample. The instrument was designed to collect specific information about the number and types of resources at each school and how each is used in reading instruction. It addresses only those areas related to resource requirements, i.e., number of staff, type of staff, equipment inventory, materials used, etc. It did not solicit any information about costs. A response rate of about 97 percent was obtained from the Resource Questionnaire.

Actual site visits were made to a sample of 100 schools for the purpose of collecting detailed cost and program data relevant to the school reading programs. The cost data collected from these schools were used to derive standard cost factors for computing program costs for all 260 schools. Costs were collected for direct resource items and for all indirect activities and district services that support school reading programs.

The site visit sample was stratified by program type and income levels. The initial stratification used the three program categories defined by ETS: (1) schools with compensatory reading program funded by Title I, (2) schools with compensatory reading programs without Title I funds, and (3) schools with no compensatory programs. A sample of 40, 40, and 20 schools was drawn from the three categories. The schools without compensatory reading were over-sampled relative to schools with compensatory programs to assure an adequate sample size in this category.

The second stratification was made by low, medium, and high income areas based on average professional salaries by county from the 1970 Census. Since staff salaries are a significant portion of total reading program costs, salary level was a useful and meaningful stratification variable. Salary levels within urban and rural areas or by regions were found to be too variable to use as a means for stratification.

Both the Program Characteristics Questionnaire and the Teacher Characteristics Questionnaire sent by ETS to all teachers involved in the study were used as the primary data sources for estimating class level costs. Specific data utilized from these questionnaires included information about the amount of time spent in reading, the use of specific equipment, and the teachers' experience and academic degrees. In addition to these questionnaires, student attendance records kept by these teachers were used in identifying the reading specialists in the school.

The final source of cost data was from secondary sources including reports, price catalogues, and national publications. These were particularly useful in preparing the detailed cost estimates for specialized staff personnel, equipment, and reading materials. The specific data sources are described more fully in Chapter 3.

2

READING PROGRAM COST MODEL

The reading program cost model presented in this chapter describes the procedure developed by RMC for estimating the cost of providing and operating a reading program both for an entire school and for individual classrooms within a school. The results of the model are presented using standardized costs which provide the best basis for comparing programs between schools. However, the model is equally useful for computing actual costs for specific school districts. The general approach to estimating cost involves estimating the quantity of resources used for reading, and then determining the cost for this quantity of resources. This chapter provides a discussion of the cost estimating model.

BASIC MODEL APPROACH

The resources used in a reading program are defined by category and include staff, facilities, equipment, material, and district centers. For each of the resource items within these categories, the reading program cost model estimates the quantity that is available for reading in each school. Using the unit cost factors for each resource item, it then calculates the total cost of employing the resource for reading. In this study, unit cost is defined to represent the cost of a single unit of the resource, for example, one tape recorder.

The basic procedure used in the model is presented in Figure 2-1. It consists of four submodels and a series of inputs and outputs. Each of these submodels and their associated inputs and outputs are discussed below.

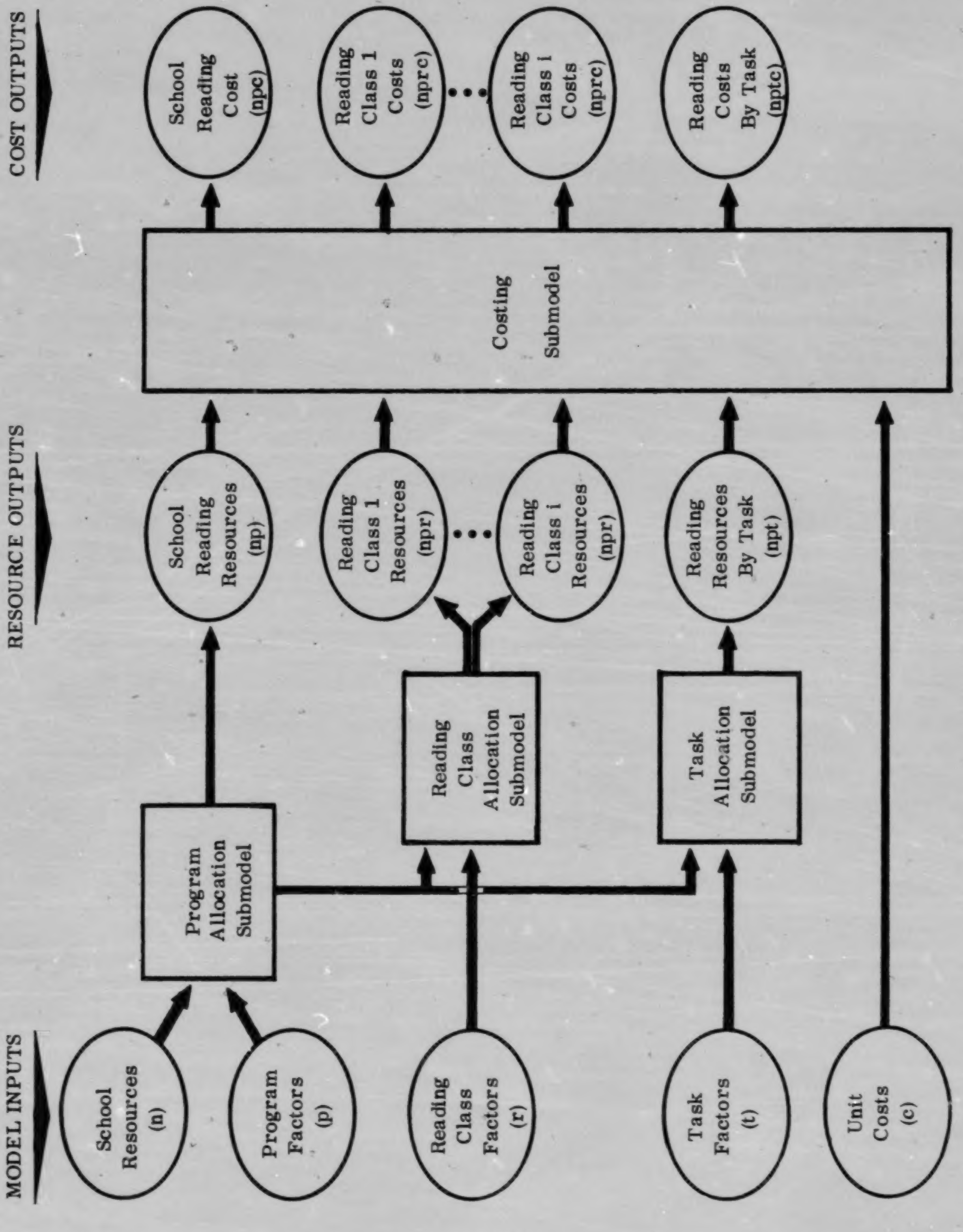
MODEL INPUTS
RESOURCE OUTPUTS
COST OUTPUTS
School Resources (n)
Program Factors (p)
Reading Class Factors (r)
Task Factors (t)
Unit Costs (c)
Program Allocation Submodel
Reading Class Allocation Submodel
Task Allocation Submodel
School Reading Resources (np)
Reading Class 1 Resources (npr)
Reading Class i Resources (npr)
Reading Resources By Task (npt)
Costing Submodel
School Reading Cost (npc)
Reading Class 1 Costs (nprc)
Reading Class i Costs (nprc)
Reading Costs By Task (nptc)

Figure 2-1: READING PROGRAM COST MODEL

Program Allocation Submodel

The program allocation submodel is used to estimate the quantity of a resource that is employed for reading in a school. The model utilizes as inputs the total quantity of a resource available in a school, determined from the Resource Questionnaire, and a program factor. This program factor represents the proportion of time that the resource is used by the school in reading, rather than in other subject areas. The procedure for calculating program factors varies according to the type of resource being examined. Specific cases are discussed later in detail. The product of these two inputs is an estimate of the quantity of resources available in a school for reading. In equation form, this submodel can be expressed as follows:

$$SRR = np \tag{2-1}$$

where SRR = quantity of school reading resources
n = total quantity of a resource available in a school
p = program factor: fraction of time a resource used in reading

In other words, the program allocation submodel divides the resources available in a school into those used in reading and those that are not.

It should be pointed out that the program factor, p, is the average amount of time that a resource is used for all reading activities, including basic reading instruction and compensatory reading instruction. Although there may be several reading programs (i.e., compensatory, developmental, etc.) in a school with corresponding differences in resource usage, the vagueness of their definitions precludes the differentation of reading programs in this submodel. However, these programs can be associated with specific reading classes based on the ETS program classification. The cost of these programs can be estimated by aggregating the costs of classes involved in the program.

Reading Class Allocation Submodel

For purposes of estimating costs, a reading class is defined as any group of students for which a separate attendance record is kept and for which a teacher completed a Program Characteristics Questionnaire. Reading classes are generally conventional classrooms, but may also include small groups of students taught by a reading specialist if attendance was taken and a questionnaire was completed.

The reading class allocation submodel is used to estimate the quantity of resources actually employed in each reading class. The submodel utilizes as inputs the quantity of school reading resources, determined by the program allocation submodel and a reading class factor. The reading class factor is the proportion of time that a shared resource is used in each reading class. The calculation of this factor varies with different resources and is discussed later in detail. The product of these two inputs is an estimate of the quantity of resources available for reading in each reading class. Mathematically, this submodel can be expressed by the following equation:

$$CRR = npr \tag{2-2}$$

where CRR = quantity of class reading resources
r = reading class factor: fraction of time a resource is used in a particular reading class when the resource is being used in reading.

Thus, the reading class allocation submodel divides school reading resources among all classes in the school where reading is taught. Although only the resources used in the reading classes in the second, fourth, and sixth grades are tabulated by this submodel, all reading classes in the schools are considered in the calculations.

Task Allocation Submodel

The majority of the resources used in a school for reading are used for actual instructional purposes. There are other tasks, however, which are necessary to properly support any reading program. These additional tasks include the diagnosis of student reading problems, in-service training for reading staff, and program planning and administration. The emphasis given by various schools to each of these tasks may prove important in future cost effectiveness analyses. The task allocation submodel is used to evaluate the relative emphasis given to each task.

The submodel is used to estimate the proportion of each resource employed for the four tasks identified above. It utilizes as inputs the quantity of school reading resources determined by the program allocation submodel and a task factor. The task factor is the fraction of time a resource is used in a particular task when the resource is being used in reading. The calculation of this factor will be described later in greater detail. The product of these two inputs is an estimate of the quantity of resources employed for each task. Mathematically, this submodel can be expressed by the following equation:

$$TRR = npt \qquad (2-3)$$

where TRR = quantity of school reading resource by task
t = task factor: fraction of time a resource is used for a particular task when the resource is being used in reading.

Thus, the task allocation submodel apportions all school reading resources among the various tasks that the school performs.

Costing Submodel

The costing submodel performs the final operation of the reading program cost model. It is used to calculate the capital and annual operating costs associated with the quantity of resources resulting from the other three submodels. In addition, this submodel produces the output reports presented in this study.

The costing submodel employs unit cost inputs for each resource and calculates the cost of the various school, class, and task resources used in reading programs. As defined previously, a unit cost is the cost for one unit of a resource. Unit costs include the capital cost component (i.e., the non-recurring cost to acquire the resource) and operating cost components (i.e., the annual recurring cost). A complete discussion of unit costs, including a list of the unit costs used in this study, is found in Chapter 3.

The costing submodel operates by multiplying the unit cost for each resource item by the quantity used for the various levels of the analysis. Mathematically, this submodel can be expressed by the following three equations:

$$SRC = npc \qquad (2\text{-}4)$$

$$CRC = nprc \qquad (2\text{-}5)$$

$$TRC = nptc \qquad (2\text{-}6)$$

where SRC = cost of a school reading resource
CRC = cost of a reading class resource
TRC = cost of a school reading resource by task
c = unit cost factor

Model Operation

From the Resource Questionnaire, a total of 94 different kinds of resources were identified. For each of the resource items, the following parameters must be calculated to operate the reading program cost model:

- school quantity (n),
- program factor (p),
- reading class factors (r),
- task factors (t), and
- unit cost (c).

Using these parameters as inputs, the model is operated in successive steps to derive estimates of the quantity and costs of each reading program resource at the various levels of analysis shown on Figure 2-1. The results of these successive operations are aggregated to form total school, reading class, and task costs.

School resource quantity inputs are available directly from the Resource Questionnaire, and a discussion of unit cost inputs is provided in Chapter 3. The balance of this chapter discusses the calculation of the remaining parameters, i.e., model inputs and operations for each of the resource cost models.

STAFF COST MODEL PARAMETERS

For each staff used in the analysis, a value for the program factor, the reading class factor, and the task factor must be calculated and used in the operation of the basic model described above. This section identifies the staff resource uses and discusses the procedures for calculating the required factors.

Quite often, the title used to define a particular kind of staff varies from school to school. A prime example of this is the reading specialist. The various titles for this staff resource were remedial reading teacher, reading teacher, master teacher, and resource teacher. Because of this problem, the Resource Questionnaire asked for a description of the duties as well as titles for each staff type in the school. This allowed us to overcome the limitation of titles and to design our staff classifications by duties. Using this procedure, a total of 39 types of staff were identified. It was important to deal with this large number of differing resources within the model because of the differing costs and task assignments between staff. However, because it would be difficult to analyze and interpret the results at this level of detail, we aggregated staff costs into seven categories for the output format. The seven categories are listed in Table 2-1, along with the detailed staff types included in each category. It can be seen from this list that the staff are defined along functional lines.

As was discussed previously, a reading class is defined as any group of students for which a separate attendance record was kept and for which a teacher completed a Program Characteristics Questionnaire. The teacher of that class is called a reading class instructor. She may be either a conventional classroom teacher

Table 2-1

SCHOOL-WIDE STAFF CATEGORIES

1. Classroom Teachers
    - Regular Teacher
    - Teacher Principal

2. Reading Specialist
    - Reading Teacher-Instructional
    - Reading Teacher-Diagnostic
    - Reading Teacher-Instructional and Diagnostic
    - Reading Teacher-Diagnostic and Training
    - Reading Teacher-Instructional, Diagnostic and Training

3. Teacher Aide
    - Para-professional
    - Teacher Aide
    - Tutor
    - Student Teacher
    - Volunteer Aide
    - Computer Proctor

4. Other Special Teacher
    - Special Education Teacher
    - Social Studies Teacher
    - Math Teacher
    - Science Teacher
    - Basic Skills Teacher
    - Other Specialty Teacher
    - Librarian
    - Learning Disabilities Teacher

5. Non-Teaching Academic Staff
    - Psychologist
    - Speech, Hearing, Visual Specialist
    - Diagnostician
    - Media Specialist
    - Consultant

6. Non-Teaching Non-Academic Staff
    - Doctor
    - Nurse
    - Social Counselor
    - Library Aide
    - Non-Instruction Aide
    - Clerical Aide
    - Secretary

7. Supervision and Administration Staff
    - Superintendent
    - Director (Assistant, Superintendent, Administrator)
    - Supervisor
    - Teacher Consultant
    - Federal Projects Director
    - Principal

(i.e., a teacher who teaches a variety of subject areas to 20-30 students) or a reading specialist (i.e., a teacher who spends most of her day teaching reading). To avoid confusion caused by the use of such a broad definition of reading class instructors, four additional types of staff have been identified. These are defined below.

Type 1: Regular Classroom Teacher-- This class instructor teaches a variety of subject areas during the day. Generally, reading instruction represents 25% or less of her time. She usually teaches reading to 20-30 students, although it is not necessary that she teach the same students all day.

Type 2: Regular Classroom Teacher in a Cross-Grade Teaching Situation-- This instructor type is identical to a Type 1 classroom teacher except that she teaches students from more than one grade. Because of this, she keeps more than one attendance record.

Type 3: Departmentalized Reading Teacher-- This instructor type spends the majority of her day teaching reading to students. Her instruction is the basic reading instruction provided to these students, although some students may be provided additional instruction by other teachers. She generally teaches at least 100 students a day across several grades, and keeps more than one attendance record.

Type 4: Reading Specialist-- This instructor type spends the majority of her day teaching reading to students. Her instruction is generally in addition to basic reading instruction provided by another teacher. She generally teaches less than 100 students per day across several grades and keeps more than one attendance record.

These four designators are used to identify the specific type of class instructor in each reading class and are needed for the reading class allocation submodel. This classification is based on the total number of students for which the instructor keeps attendance, the number of separate attendance records she keeps, and the number of students she teaches in common with other teachers. The complete procedure for determining the type of reading class instructor is described in Appendix B.

The definition of reading class instructor overlaps the previous definitions of classroom teacher and reading specialist. When the program allocation submodel is used to generate school reading resources, regular classroom teachers and reading specialists are listed separately. However, in the reading class allocation submodel, the general classification of classroom teacher is not used, since individual teachers are examined. Regular classroom teachers in the second, fourth, and sixth grades, and reading specialists who completed the Program Characteristics Questionnaire are considered as reading class instructors and are allocated for the classes they teach. Classroom teachers in other grades are not considered because their classes are not included in the ETS evaluative study. Reading specialists who did not complete the questionnaire are separated from those specialists who did and are allocated to the reading classes in a manner discussed below.

For each of the 43 individual staff resources described above, separate values for program factors, reading class factors, and task factors are required. The calculation of these parameters is described below. The reading class instructor is discussed first because of her importance in the individual reading classes.

Reading Class Instructors

Because of differences in the various types of reading class instructors described above, different methods are used in the staff cost model to calculate their respective program factors (p) and reading class factors (r). Each is discussed separately below.

Types 1 and 2: Regular Classroom Teachers

By our definition, Types 1 and 2 reading instructors teach a variety of subjects beside reading. Thus, the program allocation factor is proportional to the amount of time they teach their students reading. This time can be determined from the Program Characteristics Questionnaire where they indicate the average amount of formal reading time per instructional period and the number of instructional periods per week. In general, the product of these two responses is equal to the total time spent teaching reading each week. However, there is some concern that teachers may have improperly interpreted this question. They might have indicated the average reading time per student (reading time divided by number of students) rather than total reading time. This possibility is checked by examination of an additional question where the teacher indicated the total amount of in-school time devoted to reading. The complete procedure for determining the amount of time a teacher spends weekly in reading is presented in Appendix C. Once the amount of time spent in reading is calculated and verified, it is divided by the total amount of time a teacher spends in school to determine the program factor. It will be assumed in this model that a teacher is in the school six hours a day or 30 hours a week. Although it is probably true that a teacher spends more than six hours in school a day, this additional time is generally in administrative or planning activities, and should not be included when calculating the program factor.

Again, by definition, Types 1 and 2 classroom teachers only teach reading to one class. Thus, because their time when they are teaching reading is fully dedicated to one class, their reading class allocation factor is equal to one.

The allocation factors for Types 1 and 2 classroom teachers can be summarized by the following two equations:

$$p = \frac{h}{30} \tag{2-7}$$

$$r = 1.0 \tag{2-8}$$

where h = hours spent in reading per week as determined from Program Characteristics Questionnaire

r = reading class factor: time spent in reading

Types 3 and 4: Departmentalized Reading Teachers or Reading Specialists

Type 3 or 4 reading class instructors spend a majority of their time in the instruction of reading. Thus, their program allocation factor is close to one. However, some fraction of the teacher's day may be spent in non-reading activities, such as playground or lunchroom monitoring. In the Resource Questionnaire, the principal was asked to estimate the fraction of time that reading teachers spent in non-reading activities. By subtracting this fraction from one, an estimate can be made of the time spent in reading, which is used as the program factor. Mathematically, this relationship can be expressed by the following equation:

$$p = 1-k \tag{2-9}$$

where k = fraction of time a Type 3 or Type 4 class instructor spends in non-reading activities.

These types of class instructors teach several classes. It is assumed in this model that the fraction of time they spend with each class is in proportion to the number of students in that class divided by the total number of students being taught. Since the instructor teaches only reading, this same proportion is equal to the reading class factor. From the attendance records, it is possible to determine the number of students that she teaches in the second, fourth, and sixth grades. Unfortunately, attendance was not taken for students in the first, third, and fifth grades. Thus, the number of students an instructor teaches in these grades is not known, nor is the total number of students she teaches known. However, an estimate can be made of the total number of students taught by determining the average number of students taught per grade for the grades where attendance is taken. This average, multiplied by the number of grades in which the instructor is known to teach (available in the Resource Questionnaire) forms an estimate of the total number of students taught. Expressed in equation form, this becomes

$$s_t = \frac{\hat{s}}{e} \cdot f \qquad (2\text{-}10)$$

where s_t = total number of students taught by an instructor
$\hat{s}$ = total number of students known to be taught by this instructor in grades 2, 4, and 6
e = number of grades taught by instructor in grades 2, 4, and 6
f = total number of grades taught by instructor

This calculation is best demonstrated with an example. Suppose a particular instructor teaches 10 students in the second grade and 14 students in fourth grade ($\hat{s}$ = 10 + 14 = 24). Considering only Grades 2, 4, and 6, she teaches two grades (Grades 2 and 4, or e = 2). If, from the Resource Questionnaire, she is known to actually teach Grades 2, 3, and 4 (f = 3), an estimate of the total number of students she teaches is (24/2) · 3 = 36. Using this result, the reading class factor for a particular class taught by this instructor can be calculated by the following equation:

$$r = \frac{s}{s_t} = \frac{s}{(\hat{s}/e)\, f} \qquad (2\text{-}11)$$

where s = number of students in class
s_t = total number of students taught by instructor

Classroom Teachers

As was pointed out above, the definition for classroom teachers is used only for the reading program allocation model. For this purpose, a program factor, called the average teacher program factor, is calculated by determining the average value of the program factors for all Type 1 and 2 reading class instructors (i.e., the regular classroom teachers in Grades 2, 4, and 6). It is assumed in this calculation that the average time spent in reading by all regular classroom teachers in the school is equal to the average for teachers in the second, fourth and sixth grades.

The average teacher program factor can be calculated using the following equation:

Average Teacher Program Factor

$$p = \frac{\Sigma p_i}{N} \tag{2-12}$$

where p_i = the program factor for the i^{th} Type 1 or Type 2 reading instructor

N = total number of Type 1 and Type 2 reading instructors in analysis

Reading Specialists

The program factor for all reading specialists, whether or not they completed the Program Characteristics Questionnaire, is the same. Thus, the procedure for computing the program factor is the same as described previously for Type 3 or Type 4 reading class instructors. Basically, the program factor is estimated by the principal in the Resource Questionnaire.

Those reading specialists who completed the Program Characteristics Questionnaire are considered Type 4 reading class instructors, and are allocated only to the classes they actually teach. Their reading class factor is calculated using Eq. 2-11.

For reading specialists who did not complete the Program Characteristics Questionnaire, their time is allocated to reading classes on a different basis. The reading class factor used is called the uniform class factor. It allocates reading specialists uniformly to the classes for which they are available, in proportion to the number of students in each class. While it is true that the reading specialist may not be used uniformly by these classes, it is probably true that any teacher could use her services if needed.

Unfortunately, there was no other information for making this allocation. A question in the Program Characteristics Questionnaire did ask the teachers how often they had assistance from a remedial reading teacher. However, the responses to this question did not agree with the availability and use of reading specialists indicated by the principal in the Resource Questionnaire. It is felt that this lack of agreement was caused by two factors. First, as pointed out before, the actual titles given to reading specialists varied greatly from school to school. Thus, teachers may not have associated the reading specialist in their school with the title "remedial reading teacher" indicated in the question. Second, because reading specialists do not generally come into a teacher's classroom to teach, but take children out, teachers may not consider the reading teacher as directly assisting them.

The uniform class factor for a given resource is calculated as the ratio of the number of students in a particular class divided by the total number of students eligible to use the resource. The eligible students are determined by grade from the Resource Questionnaire. In equation form, the factor is computed as follows:

Uniform Class Factor

$$r = \frac{s}{\hat{s}} \qquad (2\text{-}13)$$

where s = number of students in a particular class

$\hat{s}$ = total number of eligible students determined from Resource Questionnaire.

Teacher Aides

In the Resource Questionnaire, the principal estimated the amount of time that teacher aides spend in various kinds of reading and non-reading activities. Using these estimates, the program factors for teacher aides are computed from the total of the percentage of time spent in developmental and compensatory reading. This type of factor will be called the staff program factor, and is represented by the following equation:

Staff Program Factor

$$p = DR + CR \tag{2-14}$$

where DR = percentage of time spent in developmental reading instruction

CR = percentage of time spent in compensatory reading instruction.

In the reading class allocation submodel, teacher aides are allocated to reading classes in proportion to how often the teachers indicate they use teacher aides. For example, a teacher who indicates that she uses a teacher aide on the average of two hours a week for reading, would be assigned 2.7 percent of the total school reading program use of teacher aides, if the total estimated usage of teacher aides in the reading program was 75 hours per week (2/75 =.027). This technique for determining reading class allocations is called the Class Measure of Use Factor.

While completing the Program Characteristics Questionnaire, the class instructors were asked to estimate their frequency of use of teacher aides. They were asked to indicate whether aides were used often, sometimes, rarely, or if they were not available. Interpreting the meaning of these responses is somewhat arbitrary. However, based on discussions with principals and teachers during our site visits, a range of use was developed and is presented in Table 2-2. Based on these ranges, specific estimates, called measure of use, were made for each response. As can be seen later, the model is sensitive only to the relative magnitudes of these estimates, and not to the absolute values.

Table 2-2

ESTIMATE OF RESOURCE USE

Teacher Response	Range of Use	Measure of Use Factor
Often	1 hr/week to 1 hr/day	10 hrs/month
Sometimes	1 hr/month to 2 hrs/week	5 hrs/month
Rarely	less than 2 hrs/month	1 hr/month

The measure of use factor for each class is defined as the ratio of the estimated use indicated by the class instructor divided by the total amount of use for all teachers. Before this calculation can be made, however, two considerations must be examined. First, the use of fixed estimates for all instructors assumes that all class instructors teach reading the same amount of time. This is not true, of course, considering the distinction between the various types of instructors. Second, the total estimate must take into consideration the use of resources by all other teachers in the school who did not complete questionnaires. These considerations are discussed below.

As already mentioned, we have identified two basic kinds of class instructors: a regular classroom teacher (Types 1 and 2) and a reading specialist (Types 3 and 4). The regular classroom teacher teaches a variety of subjects including reading. Generally, reading is taught for only approximately one hour a day by such a teacher. On the other hand, a reading specialist may spend up to five or more hours a day teaching reading. It is obvious that if both types of instructors claim to use a teacher aide "often," the reading specialist is likely to actually use aides far more than the regular classroom teacher. For purposes of this study, it is assumed that relative use of aides between types of class instructors will vary in proportion to their approximate hours of reading instruction. Thus, if both instructors indicate the same use in the questionnaire, a reading specialist will be assumed to actually use aides five times more often than a regular classroom teacher. As an example, suppose that a reading specialist and a regular classroom teacher each indicated that they used aides often. It is then assumed that the reading specialist uses aides a total of 50 hours per month, while the regular classroom teacher will use them only 10 hours per month. In addition, it is a function of the full time equivalency of the teacher. Thus, a half-time reading specialist would be assumed to use the resource one-half as much as a full time specialist, assuming the indicated use was the same. This procedure is called "weighted measure of use," and is presented mathematically below.

$$w' = abw \tag{2-15}$$

where w' = weighted measure of use
w = measure of use
a = weighting factor
b = full time equivalency of the teacher

and $a = 1$ for Type 1 and 2 class instructor
$a = 5$ for Type 3 and 4 class instructor

The reading specialists may teach several classes, and their use of aides should be spread across these classes. It is assumed that the use of aides by reading specialists is proportional to the number of students in the class. The following corrected measure of use is defined for each class:

$$\hat{w} = (s/s_t) \cdot w' \qquad (2\text{-}16)$$

where $\hat{w}$ = estimated use in one class

s = number of students in class

s_t = total number of students taught (see Eq. 2-10)

For regular classroom teachers, the corrected measure of use is equal to the total estimated use because they do not teach more than one class. Thus:

$$\hat{w} = w' \qquad (2\text{-}17)$$

When estimating the total reading program use of teachers aides, one cannot simply sum all $\hat{w}$, since these exclude all teachers who did not complete questionnaires. However, it is reasonable that the average usage indicated by the teachers who did complete the questionnaire is representative of all teachers in the school. Thus, an estimate of total reading program usage can be obtained by determining an average teacher measure of use and multiplying it by the number of teachers in the school. This process is demonstrated below.

First $$z = \frac{\Sigma w}{q} \qquad (2\text{-}18)$$

where z = average teacher use of a resource

q = total number of reading classes identified in the school

then $$w_t = z(x + 5y) \qquad (2\text{-}19)$$

where w_t = estimate total reading program use of a resource

x = total number of types 1 and 2 class instructors in school

y = total number of types 3 and 4 class instructors in school

Using Eq. 2-15 through 2-19, it is possible to calculate the class measure of use factor, as demonstrated in Eq. 2-20 below.

Measure of Use Class Factor

$$r = \frac{\hat{w}}{w_t} \tag{2-20}$$

Other Staff

This section describes the procedures for computing allocation factors for other special (non-reading) teachers, non-teaching academic staff, non-teaching non-academic staff, and supervisory and administrative staff.

Except for one minor exception, the calculation of the program factors for all these staff use either the staff program factor calculation, demonstrated by Eq. 2-14 or the average teacher program factor, demonstrated by Eq. 2-12. When the use of a particular type of staff in the reading program is indicated in the Resource Questionnaire, the staff program factor calculation is always performed. The resources not specifically discussed in the Resource Questionnaire are considered as overhead personnel and not related directly to reading. These include the principal and office secretaries. It is assumed that the program factor for these staff allocations is the same as the average teacher program factor. This is based on the fact that these staff, while not necessarily involved in the reading program, are required to operate the school and do support the teachers. It is reasonable to assume that their indirect support of the reading program is proportional to the amount of time the average teacher spends in reading. The minor exception to these two rules is the case where the staff type is fully dedicated to the reading program. An example would be a reading supervisor. In these cases, the program factor would be one, as shown in this equation.

Fully Dedicated Program Factor

$$p = 1.00 \tag{2-21}$$

The calculation of the reading class factor for all other staff uses the measure of use class factor procedure (Eq. 2-20), or by the uniform class factor procedure (Eq. 2-13). When the use of a particular staff is discussed in the Program Characteristics Questionnaire, the measure of use class factor procedure is used. Otherwise, the uniform class factor procedure is used.

Table 2-3 summarizes the program and class factors used for all other staff.

Staff Task Factors

This section describes the factors used to allocate staff costs to program tasks--instruction, diagnosis, training, and administration. The kinds of staff used in this analysis were originally identified along functional or task lines. Thus, it is assumed that for a particular kind of staff, the amount of their time spent performing a task will not generally vary significantly between schools. Using data collected both in the Resource Questionnaire and from discussions with principals and teachers during the site visits, the following list of task factors was developed. Although the values are somewhat arbitrary, the use of task factors will give additional insights as to the relative emphasis schools attach to each reading program task.

The task factors, listed on Table 2-4, represent an estimate of the fraction of a staff's total that is spent performing each of four tasks, including instruction, diagnosis of student reading problems, staff training, and administration. The staff training task shown on this table represents the amount of time an individual spends training other staff. It does not include time spent receiving training. However, the amount of training received is important and should be considered. From the Resource Questionnaire, an estimate is made of the average number of hours per year that teachers receive in-service training for reading instruction and diagnosis of reading problems. Dividing these hours by the total number of hours a teacher teaches in a year (6 x 180 = 1,080), an estimate is made of the fraction of time teachers spend receiving training. This fraction is added to the training task. Obviously, the sum of these task factors must not exceed one. The procedure for correcting this problem is shown below.

Table 2-3

PROGRAM AND CLASS FACTORS

Type of Staff	Program Factor	Class Allocation Factor
Other Special Teachers		
Special Education Teacher	Staff	Uniform
Social Studies Teacher	Staff	Uniform
Math Teacher	Staff	Uniform
Science Teacher	Staff	Uniform
Basic Skills Teacher	Staff	Uniform
Other Specialty Teacher	Staff	Uniform
Librarian	Staff	Uniform
Learning Disabilities Teacher	Staff	Uniform
Non-Teaching Academic		
Psychologist	Staff	Measure of use
Speech, Hearing, Visual Specialist	Staff	Measure of use
Diagnostician	Staff	Measure of use
Media Specialist	Staff	Measure of use
Non-Teaching Non-Academic		
Doctor	Staff	Measure of use
Nurse	Staff	Measure of use
Social Counselor	Staff	Measure of use
Library Aide	Staff	Uniform
Non-Instruction Aide	Staff	Uniform
Clerical Aide	Staff	Uniform
Secretary	Average Teacher	Uniform
Supervisory and Administrative		
Superintendent	Average Teacher	Uniform
Director	Average Teacher	Uniform
Supervisor	Fully Dedicated	Uniform
Teacher Consultant	Fully Dedicated	Measure of use
Federal Projects Director	Fully Dedicated	Uniform
Principal	Average Teacher	Uniform

Table 2-4

STAFF TASK FACTOR

Staff Members	Instruction Factor	Diagnosis Factor	Training Factor[a]	Administration Factor
Classroom Teacher	.70	.15	.00	.15
Teacher-Principal	.70	.15	.00	.15
Paraprofessional	.85	.05	.00	.10
Teacher Aide	.80	.05	.00	.15
Tutor	.90	.05	.00	.05
Student Teacher	.75	.05	.00	.20
Volunteer Aides	.90	.00	.00	.10
Computer Proctors	.90	.00	.00	.10
Reading Teacher-Instructional	.65	.15	.05	.15
Reading Teacher-Diagnostic	.15	.65	.05	.15
Reading Teacher-Instructional and Diagnostic	.40	.40	.05	.15
Reading Teacher-Diagnostic and Training	.15	.35	.35	.15
Reading Teacher-Instructional, Diagnostic and Training	.29	.28	.28	.15
Special Education Teacher	.50	.25	.10	.15
Social Studies Teacher	.80	.05	.00	.15
Math Teacher	.80	.05	.00	.15
Science Teacher	.80	.05	.00	.15
Basic Skills Teacher	.70	.15	.00	.15
Other Specialty Teacher	.80	.05	.00	.15
Librarian	.25	.00	.05	.70
Learning Disabilities Teachers	.50	.25	.10	.15
Psychologist	.00	.90	.05	.05
Speech, Hearing, Visual Specialist	.00	.90	.05	.05
Diagnostician	.00	.90	.05	.05
Media Specialist	.00	.00	.60	.40
Consultant	.00	.00	1.00	.00
Doctor	.00	.90	.05	.05
Nurse	.30	.50	.05	.15
Social Counselor	.00	.30	.30	.40
Library Aide	.00	.00	.00	1.00
Non-Instruction Aide	.00	.00	.00	1.00
Clerical Aide	.00	.00	.00	1.00
Secretary	.00	.00	.00	1.00
Superintendent	.00	.00	.10	.90
Director (Assistant, Superintendent, Administrator)	.00	.00	.15	.85
Supervisor	.05	.10	.15	.70
Teacher Consultant	.15	.35	.35	.15
Federal Projects Director	.00	.00	.10	.90
Principal	.05	.10	.10	.75

[a] The training factor includes only the training of others. It does not include the time spent receiving training. The corrections for including this are discussed in the text.

For Instruction, Diagnosis, and Administration Tasks

$$t' = t(1-f) \qquad (2\text{-}22)$$

For Training Task

$$t' = t(1-f) + b \qquad (2\text{-}23)$$

where t' = corrected task factor
t = task factor from Table 2-4
f = fraction of time an average teacher spends receiving training

FACILITIES COST MODEL PARAMETERS

This section discusses how facilities are treated in the reading program cost model. It presents the procedures used to calculate the various parameters in the basic model.

School Reading Costs

The classroom is used as the basic resource unit in the facilities cost model. When operating the reading program allocation submodel, the total number of classrooms in the school, both regular and mobile, is used as the total quantity of school facilities. It is assumed that the use of facilities for reading purposes is proportional to the amount of time the staff in the school teaches reading. Thus, the average teacher program factor (see Eq. 2-12) is used as the program factor for facilities.

Reading Class Costs

In the reading class submodel, it is assumed that all classroom teachers and reading specialists, whether or not they completed the Program Characteristics Questionnaire, have a classroom available to them proportional to their needs. Thus, a full-time teacher will always have a classroom, while a part-time teacher is allocated only a portion of a classroom. For example, a reading specialist who works only half-time will be allocated a classroom for only one-half of the total school time. It is assumed that the classroom is used for other purposes for the remainder of the time.

Classroom teachers and reading specialists who completed questions (i.e., reading class instructors) have the quantity and cost of their allocated classroom assigned exclusively to the reading classes they teach. Because the use of facilities for reading in this class is proportional to the amount of time the class instructor spends in the class for reading, the program factors and class factors used in the class allocation submodel are identical to those used for the class instructor. Knowing this type of class instructor for a particular class, the required model parameters are calculated by either Eq. 2-7 and 2-8, or Eq. 2-9 and 2-10.

Reading specialists who did not complete a questionnaire are assigned the use of classroom by the submodel. However, because these individuals do not teach identifiable classes, the facilities resource cannot be assigned exclusively to a particular reading class. But, since reading specialists are allocated uniformly to the classes for which they are available (using the Uniform Class Factor), the use of facilities is assumed to be identical to that used for reading specialists themselves. These factors can be calculated from Eq. 2-9 and 2-13.

Task Factors

The use of facilities for performing the various reading program tasks depends on the composition of the staff in the school. It is difficult, therefore, to estimate the average use of facilities by program tasks. However, after a review of the average composition of staff in all schools, the following estimates were made of the task factors:

Instruction Task Factor = .65
Diagnosis Task Factor = .10
Training Task Factor = .10
Administration Task Factor = .15

EQUIPMENT COST MODEL PARAMETERS

A total of 47 different kinds of equipment were identified in the Resource Questionnaire. This large number of equipment types was input into the cost model because of the significant differences in unit costs. However, on the output side, the equipment costs were aggregated to a total of seven categories, defined along functional lines. The seven categories are listed in Table 2-5, along with the specific equipment included in each category.

Program Factors

For each type of equipment available in the school, the principal was asked to indicate how often it was used for reading instruction as opposed to other subject areas. The responses were converted into equipment program factors as follows:

Response	Program Factor
Almost always used in reading	1.00
Generally used in reading	0.75
Used about half the time in subject areas other than reading	0.50
Generally used in subject areas other than reading	0.25
Almost always used in subject areas other than reading	0.00

Reading Class Factors

In the Program Characteristics Questionnaire, each class instructor indicated the frequency with which she used general categories of equipment. These general categories correspond to the seven categories defined in Table 2-5. Using the measure of use class factor procedure developed in Eq. 2-20, the individual reading class factors can be calculated.

Table 2-5

SCHOOL-WIDE EQUIPMENT CATEGORIES

1. Tape Recorders/Record Players
    - Tape Recorder
    - Record Player
    - Head Set
    - Listening Center
2. Movie/Filmstrip Projectors
    - Movie Projector
    - Filmstrip Projector
    - Filmloop Projector
    - Microfilm Reader
    - Previewer
    - Study Mates
3. Slide/Overhead/Opaque Projectors
    - Slide Projector
    - Opaque Projector
    - Overhead Projector
    - Single Concept Projector
4. Television/Video Tape Players
    - Television
    - Videotape Recorder and Camera
5. Reading Machines
    - Language Master
    - Tachistoscope
    - Controlled Reader
    - Shadowscope Pacer
    - Dukane Projector
    - Grolier Machine
    - Hoffman Reader
    - System 80 Teaching Machine
    - Craig Reader
    - EFI Audio Card Reader
    - Autovance
    - Rheem Reader
    - Reading Accelerator
    - AV Matic
    - Joy Reacher
    - Readmaster
6. Computers
    - Stanford CAI Computer
    - Talking Alphabeta
    - Comtudor
7. Other Equipment
    - Bioscope
    - Drymount Press
    - Light Box
    - Microprojector
    - Microscope
    - Primary Typewriter
    - Radio
    - Reader Printer
    - Super 8mm Camera
    - Phonics Mirror
    - Telebinocular
    - Polaroid Camera

Task Factors

Equipment is generally used for instruction. However, reading machines and computers do provide some capability for diagnosing student problems. This capability usually is available because of the use of curriculums in conjunction with these machines. Computers, because of their high speed capability, often actually prepare diagnostic studies of students by examining their mistakes. For this reason, 10 percent of the cost of reading machines and 20 percent of the cost of computers are assigned to the diagnostic task. The balance for each is assigned to the instruction task. For all other types of equipment, the complete cost will be assigned to the instruction task.

MATERIALS COST MODEL PARAMETERS

Four types of materials are investigated in the reading program cost model. These include:

- basal readers,
- individual reading kits,
- library books, and
- other supplies and materials.

The quantity of basal readers, individual reading kits, and library books is reported in the Resource Questionnaire. As will be discussed in Chapter 3, the quantity of "other supplies and materials" is estimated by dollar amounts only. An average total school expenditure per student for such supplies is used.

Program Factors

Because basal readers, individual reading kits, and library books are used almost exclusively for reading, their program factors are equal to one. Because the other supplies and materials include the expenditures for all subjects, this same assumption cannot be made. However, it is reasonable to assume that the allocation of such supplies to reading programs would be proportional to the amount of time spent in reading. Thus, the average teacher program factor (see Eq. 2-12) is used to estimate the quantity of other supplies used for reading programs.

Reading Class Factors

The use of basal readers and individual reading kits is discussed in the Program Characteristics Questionnaire. Therefore, the class factors for these two resources is calculated using the measure of use class factor procedure developed in Eq. 2-20.

The other two resources, library books and other supplies, are not discussed in the questionnaire. Because there is no reason to believe that a particular reading class will use more of these resources than another, these resources are allocated to all classes in the school using the uniform class factor procedure (see Eq. 2-13).

Task Factors

Because of the curricula embedded within basal readers and individual reading kits, some diagnostic capability is available. For this reason, 10 percent of the cost of basal readers and 20 percent of the cost of individual reading kits are assigned to the diagnostic task. The balance for each is assigned to the instruction task. The cost of library book and other supplies will be assigned completely to the instruction task.

DISTRICT CENTER MODEL PARAMETERS

There are two kinds of district centers: That which specialize in dealing with students themselves and those that act as resources to schools. The first type generally provides a variety of instructional or diagnostic services to which the second can send students. The second type does not deal directly with students, but acts as a resource to the schools by providing additional equipment and materials, giving staff training sessions, developing curriculum, etc. For costing purposes, these types are called Student Related Centers and Resource Related Centers, respectively. Because of the relatively small number of these centers and the significant variation in their character between schools, it was decided that the cost of these centers to a school to support their reading program would be calculated outside the reading program cost model. The procedure for calculating these costs is outlined in Chapter 3. The costs that result from this procedure are used directly in the reading program cost model.

Program Factors

Since only the reading related costs of district centers were investigated in the site visit analysis, the entire cost is chargeable to school programs. Thus the program factor for district centers is set equal to 1.00.

Reading Class Factors

Because no information is available to indicate which reading classes make use of the district centers, the costs of the centers are allocated to all classes in the school using the uniform class factor procedure (see Eq. 2-13).

Task Factors

The task factors in Table 2-6 represent the average use of district centers observed in analysis.

Table 2-6

TASK FACTORS FOR DISTRICT CENTERS

Type of Center	Instruction Factor	Diagnosis Factor	Training Factor	Administration Factor
Student Related Center	.40	.40	.10	.10
Resource Related Center	.40	.10	.40	.10

PROBLEMS WITH MISSING DATA

The return rate for questionnaires was remarkably good in this study. Of the 260 schools involved in the program, 251 schools returned usable Resource Questionnaires. This is a return rate of approximately 96 percent. An additional six schools did not return at least one Program Characteristics Questionnaire, preventing their use in the study. Thus, 245 schools, or 94 percent of the original sample, are included in the data base. Unfortunately, it is not uncommon for individuals to leave particular questions on a questionnaire blank, either because they did not understand the question, or they overlooked it. In the Resource Questionnaire, approximately five percent of the responses to any particular questionnaire were blank. In the Program Characteristics Questionnaire, the proportion of blank responses was significantly higher, but it was rare when more than one teacher in the same school did not answer a particular question. Because of the large number of inputs required to calculate costs for school and class reading programs, it is very likely that at least one of these inputs will be missing. If no attempt was made to replace these missing data, a significant number of observations would be lost to future analysis. For this reason, average values were computed and inserted for all missing inputs. In general, these averages were calculated from a sample of observations with characteristics similar to the missing observation. A discussion of the samples used for particular types of inputs is presented below.

A record is kept in the data base to indicate where adjustments for missing data have been made. This record will permit us to eliminate from future analysis those observations, if the need arises.

If no Resource Questionnaire was received from a school, this school was eliminated from the cost analysis. In these cases, the use of averages for all missing data would totally invalidate the uniqueness of the schools' program cost variables. However, where only a few data items were missing, the use of average values to replace missing items is justified since the majority of the unique program cost variables are unaffected. The average values were calculated from schools of the same program type and income level stratification which did complete the specific question.

When no Program Characteristics Questionnaire was received, the class represented by that questionnaire was eliminated from the analysis. As with a missing Resource Questionnaire, this was done because the use of averages for all inputs would destroy the unique qualities of the class cost variables. However, averages were inserted for missing data in questionnaires where the majority of the questions were completed. These averages were calculated from questionnaires completed by other teachers in the same grade and school. If there were no other teachers in the same grade, the average for all teachers in the school was used.

3

UNIT COSTS

INTRODUCTION

The methodology for costing individual reading programs is based on the fact that schools utilize similar resources and that a concise list of resource categories can be constructed. As mentioned previously, the general approach used in estimating the cost of providing reading instruction involves two steps. First, the quantity of each resource item employed in a reading program is estimated. Then the unit cost of this resource is determined. Unit costs are defined to be the cost of one unit of a resource item, such as one tape recorder or one full-time reading teacher. The product of the quantity of a resource and its unit cost is an estimate of the total cost of that resource in a school. Chapter 2 developed the procedure for estimating the quantity of resources used in school and class reading programs through the use of allocation factors. It is the purpose of this chapter to discuss the rationale, methodology, actual techniques, and data sources used to calculate the individual unit costs.

Before proceeding, it is important to point out that the cost model developed in Chapter 2 can be used to estimate the actual cost of providing reading instruction for a particular school. Where such an estimate is desired, the actual unit costs for that school would be used. Data sources, such as actual teacher salary schedules, equipment purchase receipts, and building maintenance costs, would be used to determine unit costs. Most of this information is available for the schools where site visits were performed. It was decided, however, that actual unit costs would not be used in the initial part of the analysis. As discussed previously, the wide variation among school districts' salaries, construction costs, and budgetary accounting rules prevents the development of actual costs which are comparable. Instead, standardized costs are used, reflecting the average costs at the site visit schools and data from other national sources. The use of standardized unit costs will improve the statistical significance of future cost effectiveness analyses by reducing the cost variation within strata using similar resources.

Types of Unit Costs

The unit costs developed for the reading cost model include both capital costs and annual operating expenses. Capital costs are those one-time costs generally associated with the development and implementation of a program. Operating costs are those costs that recur on an annual basis in order to run, operate, or maintain the program.

From the site visits, it was determined that there was rarely any separately identifiable program design costs for schools. Where such activities did take place, it was generally after school, with no additional compensation, spread over several years. Often the reading programs were developed by staff in other districts or by state education boards.

Capital and operating costs are identified separately so the reader can evaluate the costs involved over a time frame. However, in order to calculate total program costs, the capital costs are amortized over the life of the resource using an appropriate interest rate.

The unit cost file is organized into five primary categories:

- staff,
- equipment,
- materials,
- facilities, and
- district services.

The unit costs for these resource categories are discussed in the following sections.

STAFF COSTS

This resource category is the most important one, for it typically may involve 85 percent of the total cost for the instruction of reading. On the Resource Questionnaire, the full-time equivalents of 34 different staff types were identified, ranging from library aides to classroom teachers and superintendents. The most important staff type, of course, is the classroom teacher. School districts normally compute teacher salaries using a salary schedule which accounts for experience and educational level. Other staff salaries are usually related to the teacher schedule. For this reason, we developed a standardized salary schedule from the 94 actual schedules collected during the site visits.[1] Thus, the cost for each staff category will not be constant, but can vary depending on qualifications. This variation should prove to be valuable in the cost effectiveness analysis.

Because of the importance of the teacher salary schedule in estimating staff costs, we describe this costing procedure in detail in the next section. This is followed by a description of the annual salaries for each of the major staff categories used in the staff cost model.

Teacher Salary Schedules

Table 3-1 presents a summary of the 94 teacher salary schedules that were obtained during the site visits. For the purposes of this presentation, the base salaries for teachers with no degree, bachelor's degree, master's degree, and doctorate are used. These categories correspond with the data collected on the ETS Teacher Characteristics Questionnaire which used similar designations. Wherever possible, the figures in this table were based on earned degree classifications. However, some schedules were based on the bachelor's degree plus specified numbers of semester or quarter hours. In these cases, the BA plus 21

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[1] Salary schedules for the remaining six site visit schools were not available.

Table 3-1

ACTUAL TEACHER SALARY SCHEDULES FOR 94 SITE VISIT SCHOOLS

School I. D. Number	No Degree			B.A.			M.A.			Ph. D.			
	Base Salary	Size of Increment	Number of Increments	Base Salary	Size of Increment	Number of Increments	Base Salary	Size of Increment	Number of Increments	Base Salary	Size of Increment	Number of Increments	
127	-	-	-	7,600	533	8	9,035	596	10	10,490	578	11	
116	7,110	430	9	7,900	402	12	8,690	389	14	8,690	389	14	
195	-	-	-	6,700	465	9	7,510	552	13	7,510	552	13	
930	-	-	-	7,250	352	14	7,975	435	14	9,425	435	14	from NEA book
935	-	-	-	6,815	509	8	8,415	489	11	9,581	436	11	
024	5,005	84	10	6,200	169	15	6,950	173	15	7,550	173	15	
054	5,005	84	10	6,200	169	15	6,950	173	15	7,550	173	15	
081	-	-	-	7,000	174	17	7,800	174	17	7,800	174	17	from NEA book
041	-	-	-	6,200	273	10	6,696	271	11	6,696	271	11	
073	-	-	-	7,329	473	11	8,795	456	13	10,261	366	13	
311	-	-	-	7,329	473	11	8,795	456	13	10,261	366	13	
132	-	-	-	7,600	485	11	8,370	704	14	9,040	682	14	from NEA book
018	-	-	-	7,600	197	15	8,200	167	15	8,200	167	15	
301	-	-	-	6,300	203	14	7,119	279	14	7,119	369	14	
303	-	-	-	8,000	514	10	8,740	561	10	9,480	546	10	
308	-	-	-	6,300	203	14	7,119	279	14	7,119	369	14	
313	6,840	490	9	7,600	504	11	8,360	519	12	8,816	494	12	
321	-	-	-	8,235	425	10	8,785	535	10	8,785	535	10	
322	-	-	-	5,600	80	15	7,300	80	15	7,600	80	15	
325	-	-	-	6,600	280	12	7,600	300	12	7,600	300	12	
326	-	-	-	6,656	434	6	7,827	409	8	7,827	433	8	
336	7,020	215	17	7,450	261	18	8,380	327	20	9,815	263	20	
340	-	-	-	6,200	169	13	6,450	177	13	6,450	258	13	
341	-	-	-	8,000	375	12	9,000	325	20	9,000	325	20	
344	-	-	-	6,100	170	15	7,000	150	13	8,120	150	5	
364	-	-	-	6,929	365	11	7,329	418	14	7,829	403	14	
375	-	-	-	8,050	492	11	9,660	568	13	9,660	568	13	
528	-	-	-	8,985	430	14	10,400	668	14	12,000	570	14	
549	-	-	-	7,325	471	7	7,325	565	12	7,325	653	13	
962	-	-	-	6,600	286	7	6,850	327	11	7,150	342	12	from NEA book
963	-	-	-	9,500	764	7	11,250	764	7	11,250	764	7	
964	-	-	-	9,500	764	7	11,250	764	7	11,250	764	7	
907	-	-	-	6,100	367	11	7,003	385	12	7,455	361	15	
919	-	-	-	6,800	193	14	8,600	193	14	9,800	164	14	
911	-	-	-	8,300	816	9	9,450	983	9	9,450	983	9	
914	-	-	-	8,300	816	9	9,450	983	9	9,450	983	9	
917	-	-	-	7,100	310	10	7,200	310	12	8,340	310	12	from NEA book
003	-	-	-	7,625	317	10	7,937	380	18	7,937	420	18	
004	-	-	-	6,000	100	15	6,200	100	15	6,200	100	15	
007	-	-	-	7,750	380	12	8,909	439	13	8,909	439	13	
009	5,662	229	5	6,546	304	11	7,167	314	12	7,167	314	12	
014	-	-	-	7,136	228	12	7,820	229	13	9,009	229	13	from NEA book
017	-	-	-	7,300	461	14	8,000	461	14	8,300	461	14	
027	-	-	-	7,000	147	15	7,700	147	15	7,700	147	15	
032	-	-	-	7,150	241	16	7,850	272	16	7,850	272	16	
045	-	-	-	7,500	359	14	8,250	364	14	8,250	364	14	
048	-	-	-	7,500	476	11	8,775	432	11	9,700	483	11	

Table 3-1 (continued)

School I. D. Number	No Degree			B.A.			M.A.			Ph.D.			
	Base Salary	Size of Increment	Number of Increments	Base Salary	Size of Increment	Number of Increments	Base Salary	Size of Increment	Number of Increments	Base Salary	Size of Increment	Number of Increments	
061	-	-	-	7,875	416	10	9,165	538	11	9,165	538	11	
063	7,250	304	13	7,900	440	13	8,650	446	14	8,650	446	14	
067	-	-	-	6,170	30	10	6,470	30	10	6,470	30	10	
071	-	-	-	7,327	350	13	8,285	437	13	8,285	437	13	
079	-	-	-	7,400	307	15	8,300	280	15	8,300	280	15	
080	7,200	211	9	9,000	601	16	10,200	658	16	12,200	558	16	
083	-	-	-	5,830	133	12	6,285	174	12	6,285	174	12	
086	5,121	74	6	6,650	177	14	7,481	214	14	8,333	246	14	
087	-	-	-	7,546	322	14	8,070	348	19	9,118	320	19	
090	-	-	-	8,200	574	12	9,436	649	12	10,824	554	12	
098	-	-	-	6,500	296	13	7,050	312	15	8,330	275	16	
099	-	-	-	7,500	400	12	8,100	320	15	8,100	320	15	
100	4,464	182	10	6,872	110	12	7,732	110	12	7,732	110	12	
113	-	-	-	7,000	436	14	7,400	593	14	7,400	593	14	
120	-	-	-	7,300	325	12	7,750	323	13	7,750	323	13	
126	6,057	263	5	7,600	425	14	8,428	461	14	9,143	478	14	
137	-	-	-	7,750	310	11	8,250	330	12	8,250	330	12	
143	-	-	-	7,154	444	10	8,442	399	14	8,442	399	14	
153	-	-	-	7,375	332	12	8,115	541	12	9,850	480	12	
155	-	-	-	6,700	203	15	7,236	178	16	7,236	178	16	
162	-	-	-	8,100	547	11	8,500	523	11	9,100	513	11	
163	-	-	-	7,150	418	12	8,430	584	12	10,370	605	12	from NEA book
165	-	-	-	6,732	215	12	7,377	215	12	8,499	215	13	from NEA book
167	-	-	-	7,170	468	12	9,103	415	14	10,251	339	14	
168	-	-	-	6,900	256	14	7,521	345	14	7,521	315	14	from NEA book
173	-	-	-	7,100	233	15	7,900	267	15	9,100	267	15	
175	-	-	-	7,400	362	13	8,140	414	15	8,140	411	15	
178	-	-	-	8,050	215	6	8,430	321	6	9,200	258	6	
181	5,540	212	9	7,100	403	11	7,941	408	11	7,941	408	11	
192	-	-	-	8,070	483	10	8,790	519	11	8,790	519	11	
200	-	-	-	8,325	391	13	8,825	464	13	8,825	464	13	
202	-	-	-	6,732	215	12	7,377	216	13	8,499	216	13	
206	6,950	225	14	7,650	295	14	8,350	309	14	8,350	309	14	
210	-	-	-	7,200	394	8	7,500	466	12	8,760	445	12	
213	-	-	-	7,700	415	10	8,100	558	10	8,100	558	10	
225	-	-	-	7,200	185	11	7,500	240	20	7,500	240	20	
227	6,901	110	17	7,837	203	17	8,195	424	17	9,501	360	17	
230	-	-	-	7,000	267	15	8,000	313	15	9,400	267	15	
234	-	-	-	7,232	226	12	7,567	226	13	9,009	226	13	from NEA book
257	5,790	223	12	6,681	330	13	7,349	339	14	7,349	339	14	
260	6,630	368	8	7,177	405	8	7,780	645	8	7,780	645	8	
262	-	-	-	7,300	273	13	8,200	273	13	8,200	273	13	
279	6,277	147	10	7,385	336	14	7,902	374	14	7,902	374	14	
284	7,330	300	12	7,630	300	12	7,855	300	12	7,930	300	12	
286	-	-	-	7,000	267	15	8,000	313	15	9,400	267	15	
290	5,512	193	14	7,800	436	14	8,580	524	14	9,860	468	14	
300	-	-	-	7,100	315	12	8,000	343	21	8,000	313	21	from NEA book
	6,192	228	10	7,294	350	12	8,110	391	13	8,581	384	13	

to 60 semester hours (51 to 90 quarter hours) was considered as the master's degree, and the BA plus 61 semester hours (91 quarter hours) and above was considered as the doctorate.

If the salary schedule did not provide an entry for the No Degree category, the corresponding space in the column was left blank since it is unlikely that the school hires teachers with no degree and less likely that, if it does, it would start them at the salary for the bachelor's degree. However, when there was no entry for the doctorate, the base salary for the master's degree was carried forward since, if a teacher with a PhD were hired, the starting salary would apparently be at the master's level.

For each salary classification, the average size of the increments was computed by subtracting the base salary for the particular educational level from the maximum amount shown on the salary schedule. The result was divided by the number of increments between the minimum and maximum scheduled salaries to give the average annual increment. The base salary for a degree category was the lowest amount for that preparation level based on no experience, which gives rise to one notable exception. If the base salary for a particular educational degree classification did not start until Step 2 (one year of experience) or later on the schedule, the base salary of the lower salary classification was used. For example, if a school district did not give teachers with master's degrees credit until they worked five years, the salaries would be based on the BA classification (which does not require a minimum amount of experience) for the first five years, and then shifted to the MA classification. This would then make the base salary of the BA classification (presumably the next one lower from the MA classification) the effective base salary for a teacher holding an MA. For these few cases, the effective number of increments would be the number of years experience required before jumping over into the MA classification plus the number of increments in the MA classification.

The maximum salary within each category was determined by using the last entry in the highest level of preparation for the category. For example, if the salary schedule had a column for the master's degree, a column for the MA plus 30, and a column for the MA plus 60, the base salary in the master's degree column was subtracted from the last entry in the MA plus 60 column and divided by the number of increments. The maximum salaries as well as the number of increments are exclusive of long-service or merit supermaximums. The maximum reached by delayed increments of two or more years apart was not used.

When there was no salary schedule available or when the existing salary schedule did not produce a rational means for computing the figures for this table, the National Education Association publication, Salary Schedules and Fringe Benefits for Teachers, 1972-73, was used. The average base salary and annual increment costs for each degree classification are summarized at the end of Table 3-1. These average values are used to estimate the standardized salary schedules for staff costs in the section below.

In addition to direct salary, the unit costs for the staff cost model must include indirect or "fringe" benefit costs. The fringe benefits that are given teachers and other school staff consist of four basic elements:

1. Health insurance
2. Life insurance
3. Leave time
4. Social Security payments

Health insurance benefits are usually hospital and surgical insurance (single policy or family policy). The type of life insurance is usually the inexpensive group term life insurance. Leave time consists of sick leave, emergency or personal leave, and sabbatical leave. School districts on the average allow 10 to 14 days of sick leave, two or three days of emergency or personal leave, and two semesters of sabbatical leave at one half pay. Using the estimate of $30 per day for the cost of a substitute; assuming sabbatical leave is honored once every seven years and that about one quarter of all teachers make use of this fringe benefit, and assuming the social security payment the school district pays is equal to 6 percent of the employee's annual salary, an estimate of the total fringe benefit package is 15 percent of direct annual salary.

Classroom Teachers

Classroom teachers in the second, fourth, and sixth grades who completed the Program Characteristics Questionnaire are defined to be either Type 1, 2, or 3 class instructors in the reading program cost model. The costs for these teachers are estimated based on the experience and educational background reported in the Teacher Characteristics Questionnaire. Table 3-2 summarizes the unit costs for class instructors. The education and experience categories correspond to the breakout reported in the Teacher Characteristics Questionnaire for classroom teachers.

The costs in Table 3-2 were derived from the average salary costs for the 94 site visit schools (see Table 3-1) adjusted to include fringe benefit expenses. The following standardized salary schedule was derived from the sample schools.

	No Degree	BA	MA	PhD
Base Salary	6,192	7,294	8,110	8,581
Size of Increments	228	350	391	384
Number of Increments	10	12	13	13

These standardized costs were applied to the midpoint year for each experience category to get the unit costs shown in Table 3-2. It was assumed that salaries for AA degrees were identical to the no degree classification.

Table 3-2

UNIT COST OF CLASS INSTRUCTORS

Years of Experience	Educational Level				
	No Degree	AA	BA	MA	PhD
1 or less	7,251	7,251	8,589	9,550	10,090
2	7,645	7,645	9,193	10,225	10,751
3 - 5	8,169	8,169	9,998	11,125	11,634
6 - 9	9,087	9,087	11,406	12,698	13,180
10 - 19	9,742	9,742	13,218	15,170	15,608
20 or more	9,742	9,742	13,218	15,170	15,608

In addition to the costs shown in Table 3-2, there is a need to compute average teacher costs. In the reading program submodel for example, staff costs are estimated for an entire school, and not individual classes. For this purpose, an average classroom teacher unit cost is used. This cost, based on the average salary of all teachers who completed the Teacher Characteristics Questionnaire and a 15% factor for fringe benefits is estimated to be $10,600 (this estimate is temporarily based on NES averages).

In addition to regular class instructors, the classroom teacher in some schools was a teacher-principal. This occurred four times in the sample of 254 schools, usually in small rural areas which could not justify the cost of a purely administrative principal. It is assumed that these persons are paid on the basis of the teacher's schedule, but are credited with the additional time they must put in to "start" the school in the fall and "close" the school in the spring. It is assumed this involves an additional three weeks over and above the standard 36-week school year. Therefore, the unit cost of the teacher-principals will be 1.08 of the salary step into which they fall on the teacher schedule.

Reading Specialists

Reading specialists are costed on the basis of the teacher's salary schedule. There are five types of reading specialists depending on the area of emphasis of their responsibilities: instruction, diagnosis, training, or a combination of these.

Two hundred twenty-seven schools in the sample had reading specialists of one type or another. From our site visits, it was determined that the vast majority of the reading specialists were paid on the same teacher salary schedule discussed above. Reading specialists were generally paid a higher salary, but this generally resulted from more years of experience and higher educational qualifications. Therefore, the unit cost of reading specialists is calculated from the classroom teacher's salary schedule.

Those reading specialists who completed Program Characteristics Questionnaires, and thus are considered Type 4 class instructors, are allocated directly to particular reading classes. Because they also completed Teacher Characteristics Questionnaires, their individual salaries can be estimated. For reading specialists who did not complete Program Characteristics Questionnaires, average costs are calculated based on those reading specialists who did complete the required questionnaires. These averages are shown below in Table 3-3.

Table 3-3

READING SPECIALIST STAFF COSTS

Staff Type	Average Annual Cost
Instructional Specialist	$12,225
Diagnostic Specialist	$12,225
Instructional/Diagnostic Specialist	$12,225
Diagnostic/Training Specialist	$12,225
Instructional/Diagnostic/Training Specialist	$12,225

Teacher Aides

Table 3-4 presents the summarized unit cost of paraprofessional staff types based on the data collected from the 100 site visit schools.

Table 3-4

TEACHER AIDE STAFF COSTS

Staff Type	Average Annual Salary
Paraprofessional	$3,780
Teacher Aide	$2,829
Tutor	$4,712
Student Teacher	-0-
Volunteer Aides	-0-
Computer Proctors	$5,000

Paraprofessionals are paid $3.50/hour or $3,780/school year assuming 180 days per work year at 6 hours/day. The paraprofessional occurred seven times in the sample and is very similar to a teacher aide but it paid somewhat more.

Teacher aides are paid $2.62/hour or $2,829/school year assuming a 180 day work year at 6 hours/day. The teacher aide occurred in 168 schools, and site visit data were obtained for 51 schools with teacher aides.

Tutors are paid $4.36/hour or $4,712/school year assuming a 180-day work year at 6 hours/day. The latter assumption is not nearly as justifiable as the same assumption applied to teacher aides and paraprofessionals. Tutors are rarely employed on a full-time basis. Many schools have student tutors (upper grade level students instruct lower grade level students). Tutors occurred in 14 schools in the total sample, and site visit data were available for four of them. Of these four, two received high wages, and two received relatively low wages, with an average value of $4.36/hour.

Student teachers are a resource with no real dollar cost to the school. Volunteer aides, by nature of their description, are also without cost. Computer proctors were used in only one school. Their cost averaged $5,000 per year.

Other Special Teachers

Table 3-5 presents the summarized costs of other special teachers based on data collected from the 100 site visit schools and NEA national estimates.

Table 3-5

OTHER SPECIAL TEACHERS COST

Staff Type	Average Annual Cost
Special Education Teacher	$11,750
Social Studies Teacher	$11,750
Math Teacher	$11,750
Science Teacher	$11,750
Basic Skills Teacher	$11,750
Other Specialty Teacher	$11,750
Librarian	$11,750
Learning Disabilities Teacher	$11,750

Fifty-three schools in the sample reported that they had special education teachers. Five schools from our site visits reported specific salary data for special education teachers. Of these, three schools indicated that the salaries of these teachers are based on the normal teacher schedule, one reported to be very close, and one reported the dollar salary of the special education teacher which seemed to reflect that she was on the teacher schedule. Therefore, the teacher salary formula is used to calculate special education staff costs. However, actual experience and education level of these staff are difficult to estimate. In some cases, special education teachers have more experience than average (since special education is a field requiring particular skills) but in other schools they have less experience than average (since only recently have colleges begun to offer special programs for special education). The same problem exists for educational level, since these teachers traditionally were required to have master's degrees in special education training. Recently, however, undergraduate degree programs have begun to offer specialty programs in special education. Learning disabilities specialists are similar to special education teachers and this discussion applies to them as well. For this study, however, it is assumed that such teachers earn on the average the same as an average classroom teacher. Thus, their cost is $10,600 per year.

Social studies teachers, math teachers, science teachers, and basic skills teachers are on a teacher salary schedule and have the experience and educational level of the average classroom teacher. Their cost, therefore, is $10,600 per year (a temporary figure based on NEA data).

The other specialty teachers include staff involved with subjects such as music, art, or vocational skills, etc. They are paid on a teacher schedule. Again, it is debatable whether their years of experience and their educational background are equal to that of the average teacher; as in the case of special education teachers one can argue both ways. Since there is no strong evidence to indicate otherwise, we will assume other specialty teachers have approximately the same educational background and experience as the average classroom teacher.

Sixty-eight librarians were reported in the sample of schools. From the site visits data were obtained from twelve schools. Only one of these reported that the librarian received any increment over and above the teacher's schedule. In fact, four schools reported dollar salaries of their librarians or media specialists that were below the teacher's base salary. Therefore, the teacher's schedule is used as the means to estimate the librarian's. The average education and experience of the regular classroom teacher are used as the parameters of the formula.

Non-Teaching Academic Staff

Table 3-6 presents the summarized costs of non-teaching academic staff.

Table 3-6

NON-TEACHING ACADEMIC STAFF COSTS

Staff Type	Average Annual Cost
Psychologist	$16,800
Speech, Hearing, Visual Specialist	$11,750
Diagnostician	$12,225
Media Specialist	$12,225
Consultant	$36,000

One hundred twenty schools in the sample reported having psychologists. From the site visit data, 15 schools provided specific salary information about psychologists. These data seem to support the hypothesis that psychologists are paid on a teacher schedule but work a 38-week year, giving them a 5.5-percent bonus above the teacher with equivalent education and experience. However, we have no method of estimating the experience of psychologists. For this reason we use the NEA reported average salary of $13,271 plus 15 percent for fringe benefits. This represents a 43 percent higher cost than the average teacher. Adding 15 percent for fringe benefits gives an average annual cost for psychologists of $15,261.

One hundred eighty-nine schools in the sample had speech, hearing, and/or visual specialists. Thirty-seven from the site visits reported specific data about the salary of this staff type. Of the 37, 27 reported they were on the teacher schedule. four on an unknown increment, two on teacher schedule plus $450, and three reported a dollar figure of $7,633 annual salary. For purposes of this study, it is assumed that they are paid on a straight teacher schedule. The average degree and experience of a speech therapist will be used to estimate their cost.

Twenty-five schools in our sample reported diagnosticians. No specific salary data were obtained from the site visits. However, it is reasonable to assume that diagnosticians are paid on a teacher schedule and have experience and educational background equivalent to the average school teacher. Salaries for diagnosticians are estimated using the average classroom teacher cost.

It is assumed that media specialists have duties similar to school librarians. Media specialists would seem to have slightly higher salaries because they have higher educational qualifications--a master's instead of a bachelor's. In the sample, 68 schools reported librarians and 15 schools reported media specialists. From the site visits, data from 10 schools were obtained on the salaries of librarians, and from two schools on the salaries of media specialists. The latter two schools reported the dollar salary of their media specialists to be $7,500 per year. This was actually somewhat low relative to the teachers in the school and seems to contradict the assumption that media specialists have higher salaries because of higher educational background. However, it is most likely that this is the exception rather than the rule. The same method that is used to compute the librarian's cost is used for the media specialist. This involves the use of the teacher salary schedule; however, it is assumed that she has a somewhat higher educational background.

Non-Teaching Non-Academic Staff

Table 3-7 presents the summarized costs of non-teaching non-academic staff.

Table 3-7

NON-TEACHING NON-ACADEMIC STAFF COSTS

Staff Type	Average Annual Cost
Doctor	$35,000
Nurse	$11,000
Social Counselor	$13,630
Library Aide	$ 2,892
Non-Instructional Aide	$ 2,892
Clerical Aide	$ 2,892
Secretary	$ 3,775

Eleven schools in the sample reported that they had nurses. From the site visit data, specific salary information from three schools was obtained. For these three schools an average salary of $7,342 was indicated, assuming a 36-week year for the one school which reported a daily cost for its nurse. The salary of nurses reported by the other two schools was very low, especially as compared to NEA national estimate of $8,634. The reliability of the NEA figure would be much better than that obtained in the small sample of site visits. However, the NEA figure is adjusted to reflect the differences in the sample bias. A 15-percent increment for fringe benefits is added to this figure to give the average annual cost.

A social counselor is equivalent to a social worker or home visitation teacher. In the sample, 87 schools had social counselors or the equivalent. From the site visits, 15 schools reported specific salary data about social workers or counselors. For this staff type approximately half of the schools reported they were paid on a straight teacher schedule plus an increment approximately equivalent to three weeks extra work. Therefore, the cost for social counselors could be calculated on the basis of a TS and a 39-week work year with the equivalent education and experience. However, since no estimate of the education and experience of a social counselor is available, the NEA national estimate of $10,758 is used; this reflects a 16 percent higher salary than the average teacher receives. A 15 percent increment is again added to this figure to give the average annual cost.

There are 19 library aides and 26 non-instructional aides reported in the sample. Two schools from the site visits reported specific salary data for library aides with an average annual salary of $2,953. This figure is quite close to that of regular teacher aides, and it is reasonable to assume that they are paid on the same basis. Therefore, the salary data for teacher aides is used to calculate the cost of library aides.

Other miscellaneous salary data for aides from three site visit schools listed an average annual salary of $2,152, which is on the low side but within the same teacher aide salaries. Since data for non-educational aides and clerical aides was not obtained, it is assumed that the previous discussion applies to them as well.

Two schools reported specific salary data for secretaries. One reported a weekly salary of $75 which is equivalent to $2,700-$3,000 for a 36-40 week work year, while another school reported a salary range of $4,150 to $5,250. An average annual figure of $3,775 was therefore assumed for all secretaries.

Doctor salaries are normally paid on an hourly or daily basis for less than full time utilization. These were estimated to be $175 per day or $35,000 per year for 200 days.

Supervision and Administration Staff

The salaries of this category of staff are summarized in the following table.

Table 3-8

ADMINISTRATIVE STAFF COSTS

Staff Type	Annual Salary
Superintendent	$22,525
Director (Assistant Superintendent, Administrator)	$18,615
Supervisor	$17,820
Teacher Consultant	$12,225
Federal Projects Director	$16,565
Principal	$19,270

These cost data are based primarily on NEA data. However, according to the NEA figures, the average salary for directors is higher than that of superintendents. This is due to the fact that directors occur much more frequently in larger, higher-paying school districts. Therefore, in order to calculate a standardized cost for directors, we computed a weighted average ratio of the superintendent's to director's salary. We then applied this ratio to the national average superintendent's salary to get a representative salary of directors.

Teacher consultants are normally teachers who are highly trained and/or have considerable experience in a particular area of education. Thus, their unit cost is based on a teacher allowing for higher than average qualifications.

The federal projects coordinator is of the nature of a supervisor, but is typically not paid as much because of his more limited area of responsibility.

EQUIPMENT COSTS

In the Resource Questionnaire, schools identified the number of units of equipment they had in their school by major equipment types. A total of 47 types of equipment were identified. At the site visits actual brand names, purchase prices, and date of purchase were also collected. With these data the unit cost for each of the equipment types is calculated. Inflation of prices, school purchase discounts, maintenance of equipment, and support software are considered in the calculated cost.

Equipment costs involve both capital investment and annual operating cost. The initial purchase price of the equipment is the capital cost which is then amortized over the expected life of the equipment to yield the annualized capital costs. The annual operating cost for equipment involves two elements: maintenance and repair costs, and AV software and support materials cost. These costs are estimated on the basis of cost per equipment item, and then added to the annualized capital cost to yield the total annual cost for that equipment item.

Mix Considerations

The types of equipment most often found in elementary schools include the following:

- tape recorders,
- record players,
- 16mm movie projectors,
- filmstrip projectors,
- opaque projectors,
- overhead projectors,
- televisions,

- filmloop projectors,
- listening centers, and
- previewers.

For this equipment list we determined a standardized unit cost based on an average "mix" of equipment within each category. By "mix" we mean the collection of brands or specific kinds of equipment that schools normally buy. For example, tape recorders include both reel-to-reel and cassette, covering a wide range of costs. To determine a useful standardized unit cost, we determined a weighted average unit cost for each school. This procedure will therefore reflect in the result the proportion of tape recorders purchased at the various price levels. These weighted average costs are based on data from schools where a complete inventory was available, including the unit costs and quantity for each type of equipment.

For the remaining 37 equipment types, the mix factor was not important and therefore not used for the following reasons:

1. Due to the inherent nature of the equipment, a school would not have a variety within an equipment type. Once the school decided which brand to buy, it would probably buy only that one brand. Examples would include Language Masters, tachistoscopes, and primary typewriters.
2. Due to the high cost or specialized nature of the equipment, the school would buy only one unit of that equipment type. Examples would include video equipment and the Talking Alphabet.
3. The equipment type is sufficiently specific to exclude a wide variety of brands or costs. Examples would include the Shadowscope Reading Pacer, Craig Reader, Hoffman Reader, Grolier Machine, Dukane Projector, and Rheem Reader.

In these cases where mix considerations were not important, the standardized unit costs were determined by averaging the actual unit costs reported by the schools.

Inflation and Discount Considerations

In order to estimate the unit price of equipment, certain considerations are necessary. These considerations are the effects of inflation on prices and the typical discount schools receive off the list price because they buy in large quantities.

The unit price data collected contain data from a range of years. In order to make them comparable they must be adjusted to 1973 prices. The consumer durable goods price index is used as an indication of the rate of increasing prices. These indices are presented in Table 3-9. It is apparent that only reported purchase prices could be used that included the date of purchase. These unit costs were then compared to list prices in the National Audio Visual Association AV Equipment Director 1973-74. This gave the approximate discount factor schools receive, which was found to be approximately 25 percent. In instances where schools reported the use of equipment for which actual purchase price did not exist, the catalogue list price was multiplied by the discount factor to give the equivalent school purchase price. In rare cases where unit prices were not available from school-reported data or catalogue prices, then retail stores were consulted.

For the Reader Printer, Systems 80, and Joy Reader there was no cost information readily available from any of the sources mentioned above. Therefore, an estimated unit cost is used, based on the average unit cost of reading machines for which unit costs were determined. The above equipment types are classified as reading machines.

Although care has been taken to adjust for the effects of inflation and school discounts, the following cautions should be kept in mind:

1. Although it is true that inflation affects the prices of equipment, advances in technology may compensate for it. New electronic equipment is often available at lower prices or innovations in science and production engineering have given equipment more features, improved durability, and quality at slightly increased prices.

Table 3-9

COMMODITY PRICES - CONSUMER PRICES DURABLES[a]

Year	Price Index[b]
73	1.0000
72	1.0243
71	1.0454
70	1.0894
69	1.1383
68	1.1330
67	1.1677
66	1.1859
65	1.1871
64	1.1825
63	1.1929
62	1.1964
61	1.2083
60	1.2071
59	1.2000
58	1.2180
57	1.2365
56	1.2767
55	1.2767
54	1.2516

[a] Reference: Bureau of the Census, Statistical Abstract of the United States, 1972.

[b] To convert a purchase price in 1960 to 1973 dollars, one would multiply the 1960 price by 1.2071, that year's associated price index.

2. Although using the consumer durable goods price index is superior to using an arbitrary constant inflation rate, it still may yield artificially high values on older equipment because of the evolution of the equipment itself. It is difficult if not impossible to construct price indices over time when the actual product is constantly changing. Essentially the value of a school's inventory of equipment is expressed in terms of 1973 prices and then amortized over the life of the equipment at a constant inflation rate.

3. Many school districts put out their yearly "shopping list" for equipment for bid from various local distributors. Thus, schools are able to buy equipment at substantially lower than retail prices. For some equipment types, however, a school may not receive a discount off catalogue prices because these types would not typically be bought in bulk. These would be very specialized equipment types making it unlikely that they would be discounted in practice.

Table 3-10 summarizes the capital cost figures for each of the equipment items listed in the school reading programs.

Amortized Equipment Costs

The life of equipment is a very difficult thing to estimate precisely. Schools typically never discard equipment. It just becomes shelved as it becomes obsolete or inconvenient to use because of increasing frequency of repair. However, rough estimates were made in increments of five-year useful lives, based on discussions with school district personnel and equipment manufacturers. It should be pointed out that the error attributable to this parameter is diminished in the calculation of annualized capital cost. For example, a 16mm movie projector whose estimated life is 15 years with an error tolerance of ± 20 percent at a compound interest rate of 7 percent will have an annual amortized cost with an error tolerance of ± 13 percent. The error becomes less critical as the estimated life of the equipment type increases. Fortunately, the unit cost of equipment increases with the expected life of equipment. In other words, high cost items tend to last longer which makes the absolute dollar error relatively insensitive to the equipment life estimate errors. Table 3-10 lists the estimated life of equipment by type and the associated annualized capital cost.

Table 3-10

STANDARDIZED UNIT EQUIPMENT COSTS

Equipment Type	Capital Unit Cost	Life (in years)	Annualized Capital Cost (at 7% interest)
Tape Recorders	93.64	5	22.84
Record Players	68.15	10	9.71
16mm Movie Projector	480.45	15	52.74
Filmstrip Projector	84.70	10	12.05
Slide Projector	109.15	10	16.75
Opaque Projector	277.42	10	39.49
Overhead Projector	109.96	10	15.66
Television	204.66	10	29.14
Language Master	265.00	10	37.73
Tachistoscope	187.30	10	26.66
Controlled Reader	249.00	10	35.46
Shadowscope Reading Pacer	75.20	10	10.71
Bioscope	197.00	10	28.05
Drymount Press	165.60	10	23.57
Dukane Projector	305.00	10	43.43
Filmloop Projector	143.00	10	20.36
Grolier Machine	20.00	10	2.85
Headsets	2.83	5	.69
Hoffman Reader	389.00	10	55.40
Light Box	20.00	10	2.85
Listening Center	62.00	10	8.82
Microfilm Reader	202.88	10	28.88
Micro Projector	220.00	10	31.33
Microscope	62.14	10	8.84
Polaroid Camera	127.60	5	31.12
Previewer	23.50	5	5.73
Primary Typewriter	180.00	15	22.66
Radio	47.75	5	11.64
Reader Printer	207.13	10	29.50
Single Concept Projector	160.00	10	22.78
Study Mate	31.00	5	7.56
Systems 80	202.13	5	49.28
Video Equipment	1,700.00	10	242.04
Super 8 Movie Camera	120.00	5	29.26
Talking Alphabet	1,390.00	10	197.94
Craig Reader	199.60	10	28.42
EFI Audio Card Reader	229.00	10	32.61
Phonics Mirror	150.00	15	16.46
Autovance	115.00	10	16.38
Rheem Reader	141.75	10	20.19
Reading Accelerators	61.48	10	8.76
Comtudor	1,500.00	10	213.57
Telebinocular (Keystone)	216.80	10	30.87
AV Matic	255.00	10	36.31
Joy Reader	202.13	10	28.78
Readmaster	135.36	10	19.28

Maintenance of Equipment

Maintenance of equipment is handled in a variety of ways by different school systems. The smaller ones usually send all repairs out to a local electronics repair firm or the equivalent. Others may have service contracts with these types of firms. Still others employ repairmen at the district level to handle all repairs. In addition, most schools employ someone who assumes the title of A V man to perform minor maintenance such as replacing bulbs, etc. He is also responsible for keeping track of the inventory, sending equipment out for repair when necessary, and ordering new equipment.

School districts usually had a small contingency-type budget item for maintenance of equipment; however, the true costs varied widely from year to year. Comparing the figures reported by school districts for annual maintenance costs to the total capital value of the school's equipment inventory, showed that these costs averaged about 10 percent of the total value. This figure is somewhat lower than the 15-percent figure used by Sue Haggart[1] in a study of education program costs. However, using the same methodology, we assigned an annual maintenance cost to equipment items equal to 5 or 15 percent of their capital value depending on their complexity. In general, electronic equipment was considered more complex than simple projection equipment. Equipment maintenance costs are summarized in Table 3-11.

AV Software and Support Materials

The various types of equipment require significant quantities of operating materials. They include AV software and such items as screens for projectors, etc. Based on data collected on the site visits, an analysis was made of the relationship between the inventory of equipment and the annual expenditure for AV software. This was used to estimate the approximate amount of support materials used per unit of equipment. For instance, the cost of a certain number of filmstrips is added onto the cost of a filmstrip projector as well as a certain portion of a portable

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[1] Sue A. Haggart, "Program Cost Analysis in Education Planning," the RAND Corporation, P-4744 (December 1971).

Table 3-11

BREAKDOWN OF EQUIPMENT OPERATIONS COSTS

Equipment Type	Maintenance	AV Software	Total
Tape Recorders	14.04	19.51	33.55
Record Players	10.22	15.24	25.46
16mm Movie Projector	24.02	40.00	64.02
Filmstrip Projector	4.23	73.16	77.39
Slide Projector	16.37	12.00	28.37
Opaque Projector	13.87	--	13.87
Overhead Projector	5.49	5.00	10.49
Television	30.69	--	30.69
Language Master	13.25	7.54	20.79
Tachistoscope	9.36	5.33	14.69
Controlled Reader	37.35	8.34	45.69
Shadowscope Reading Pacer	3.76	--	3.76
Bioscope	9.85	--	9.85
Drymount Press	8.28	4.71	12.99
Dukane Projector	45.75	14.87	60.62
Filmloop Projector	7.15	57.50	64.65
Grolier Machine	3.00	.83	3.83
Headsets	.14	--	.14
Hoffman Reader	58.35	16.97	75.32
Light Box	1.00	--	1.00
Listening Center	3.10	--	3.10
Microfilm Reader	10.14	36.80	46.94
Micro Projector	11.00	--	11.00
Microscope	3.10	1.76	4.86
Polaroid Camera	19.14	10.00	29.14
Previewer	1.17	--	1.17
Primary Typewriter	27.00	--	27.00
Radio	2.38	--	2.38
Reader Printer	31.06	7.50	38.56
Single Concept Projector	8.00	4.55	12.55
Study Mate	1.55	--	1.55
Systems 80	10.10	--	10.10
Video Equipment	255.00	48.40	303.40
Super 8 Movie Camera	18.00	6.00	24.00
Talking Alphabet	208.50	51.58	260.08
Craig Reader	29.94	8.37	38.31
EFI Audio Card Reader	44.85	11.01	55.86
Phonics Mirror	--	--	---
Autovance	17.25	4.82	22.07
Rheem Reader	21.26	6.91	28.17
Reading Accelerators	3.07	--	3.07
Comtudor	225.00	42.71	267.71
Telebinocular (Keystone)	10.84	--	10.84
AV Matic	12.75	22.25	35.00
Joy Reader	30.31	9.85	40.16
Readmaster	20.30	--	20.30

tripod-type screen. The cost of records is added to the record players, the cost of tapes to tape recorders, etc. Included in AV software are

- filmstrips,
- records,
- cassette tapes,
- reel tapes,
- transparencies,
- slides,
- study prints/charts,
- film/tape or record lessons,
- sound films,
- filmloops,
- controlled reader films, and
- tach/X films.

Other items include

- 16mm film rental, and
- screens for projectors, etc.

From the site visits, detailed inventories of the above software were collected. These inventories were then compared with the inventories of equipment at the respective schools. With the knowledge of which software items are used with which machines, ratios were constructed that related, for instance, the number of filmstrips per filmstrip projector, the number of records per record player, and the number of screens per projector. These ratios were then multiplied by the estimated unit cost of the software item to yield the total cost of each software item per each associated equipment item. These totals were then amortized over the life of the software item (at a 7 percent interest rate) to yield the annualized cost for software and support materials for each equipment type.

These software costs are summarized in Table 3-11. The AV costs are added to the maintenance costs to give a total annual O&M cost for each equipment item.

MATERIALS COSTS

The cost of materials includes both capital costs and annual operating expenses. In Table 3-12 the costs of various instructional materials are summarized.

Table 3-12

MATERIAL COSTS

Type of Material	Capital Cost	Annualized Cost	Annual Operating Cost
Teaching Materials and Supplies (per student)	--	--	$6.83
Basal Texts (per book)	$5.04	$ .72	$ .50
Library Books (per book)	$3.75	$ .41	$ .38
Reading Kits (per student)	$2.93	$ .42	$ .29

Teaching Materials and Supplies

The cost of teaching materials and supplies is estimated on a per student basis. At this level of detail it is impractical to use the resource methodology, although the cost of teaching materials and supplies is significant in terms of total costs. From a subsample of 58 schools where these data were collected, the average estimated cost per student for teaching materials and supplies was $6.83. This cost is an annual operating cost for the classroom which depends on the number of children in the classroom. Possible sources of error in this estimate would include the fact that some of the figures may represent instructional materials and supplies for reading only. Another source of error is the fact that some of the figures may represent not just instructional materials but maintenance materials. However, it is reasonable to assume that the errors are not strongly biased and that the average is a good estimate of the true mean value.

Basal Texts

Basal readers are the basic text in the majority of reading programs. From our site visits, the average cost of a basal reader was $5.04. This was calculated from a subsample of 19 schools that used the following variety of publishers for their basal texts:

- Scott Foresman,
- Ginn Compnay,
- Harper Rowe,
- Lippincott,
- American Book Company,
- BRI Sullivan,
- Allyn and Bacon,
- SRA, and
- Houghton Mifflin.

Basal texts are typically adopted at five year intervals in the more "traditional" educational systems. After this period, however, the books are usually kept and used extensively for anotner five years as supplementary readers. Other systems collect smaller numbers of a wider variety of texts each year. In these systems, no specified basic texts are adopted; however, the cost of texts on a per student basis is comparable to those systems that do adopt a specific text. It is assumed that the annual cost to repair or replace lost texts is 10 percent of the capital cost annually.

Library Books

The average cost of a library book calculated from a subsample of 10 schools was $3.75. It is assumed that the useful life for library books is 15 years. It is further assumed that the annual cost to repair these books and to provide other supplies to library is equal to 10 percent of the capital cost of the library books.

Reading Kits

By reading kits, we mean instructional systems or packaged programs that may cost more than the average basal program. The primary ones that we are interested in are

- Alpha One,
- Distar,
- Imperial Reading Program,
- Macmillan Spectrum,
- Miami Linguistic Program,
- Peabody Language Development,
- Scholastic Reading Lab.,
- SRA kits,
- Sullivan Readers,
- Webster Classroom Reading Clinic, and
- Words in Color.

The number of students for whom these systems are designed can vary; therefore, the cost of these programs is calculated as an average cost per student. In the Resource Questionnaire the school identified the number of students for whom this resource was available.

Surprisingly, the average cost per student cost of reading kits was $2.93--lower than the average cost of a basal reader. The only explanation for this is the possibility that those schools reporting cost data on the reading kits tend to use them as a supplementary instructional tool more than the primary one. As a supplementary tool, they would need much less of an inventory with a corresponding reduction in the per pupil cost. Reading kits are estimated to last ten years. To cover the cost of consumables generally required by these kits, as well as to cover loss or damage, 10 percent of the capital cost will be used as the annual operating cost.

FACILITY COSTS

The cost of facilities involves both capital costs and operating costs. The capital cost is the design and construction cost; this is estimated by a cost per square foot which runs in the neighborhood of $28-$35. Also, for purposes of amortizing the initial construction cost over the lifetime of the building, 35 years is the normal estimate of the life of a school building. The interest rate that is normally used is 7 percent, which is approximately what is paid on school construction bonds. The analysis of facilities cost makes use of the number of classrooms, rather than the total number of square feet in the school. This is done for two reasons. First of all, the total square feet reported in the Resource Questionnaire often included gymnasium and/or cafeteria space which is not part of the instructional facility space to be allocated to reading. Also, this question had a fairly high non-response rate indicating that it was unreasonably difficult for many principals to answer.

The size of an average classroom is estimated to be 30 feet by 40 feet. Associated hallway space is estimated to be 6 feet by 40 feet. This is one half of a 12 foot wide hallway where the classroom across the hall would take the other half of the share. In addition, instructional office space on a per classroom basis is assumed to be 300 square feet. This totals to 1,740 square feet of facility space per classroom including associated support space. Multiplying this by the average cost for construction yields a cost of $54,810 per classroom per year for construction costs. The annualized cost is $3,480 per classroom.

The operating and maintenance costs for facilities are the annual operating costs associated with facilities. The primary cost elements in facility operation and maintenance are

- custodial and cleaning staff salaries;
- general maintenance which includes the cost of grounds maintenance, broken windows, painting, and general upkeep;
- general supplies which include the cost of wax, mops, buckets, and other essentials; and
- utilities which include water, sewage, gas, electricity, and telephone.

These costs tend to be difficult to estimate accurately and vary tremendously by geographic location and climate. From the site visit data the costs in each of these elements were plotted against the number of square feet for each school as well as the number of classrooms in the school. From this analysis the results in Table 3-13 were obtained.

Table 3-13

FACILITY OPERATION AND MAINTENANCE COST

Cost Element	Cost Per Sq. Ft.	Cost Per Classroom	Cost Per School
Custodial Salaries	.39	678	14,916
General Maintenance	.16	278	6,116
General Supplies	.03	52	1,144
Utilities	.24	417	9,174
Total	.82	1,425	31,350

NOTE: These figures reflect the average size of a classroom of 1,740 square feet including associated support space. The average school had 22 classrooms and an enrollment of 550 students.

DISTRICT SERVICES

In addition to the resources a school has for its exclusive use within its own school building, school districts often offer services that are available to all schools in the district. In order to have a complete picture of all the resources a student is exposed to which may affect his achievement gains, these services are included in the analysis. There are two primary types of services offered:

1. Resource Related Centers
2. Student Related Centers

The first involves centers that offer additional materials and equipment to the instructional staff in the schools to improve the quality and assist them in the instruction they offer. These materials generally are items which are over and above those the school normally provides, since a teacher would use these only occasionally. Also, there may be items that are of high enough expense that a single school could not afford them, but when bought collectively by the school district, are affordable. In summary, resource related centers do not offer services directly to students but provide resources to instructional staff to use in their programs.

Student related centers are services offered to students by the districts. These services are provided directly to the student, and usually he must travel to that center to receive them. It should be noted here that in the cost analysis, district personnel who travel to the various schools providing instructional services to students and staff are counted as part-time staff in proportion to the number of schools they service. Student-related centers in contrast to resource-related centers provide instructional services directly to students. The staff is usually highly trained in diagnosing reading problems and prescribing remedial action. Generally an individual school could not afford to support this type of staff. Student-related district centers as defined in this study do not include services provided to the handicapped in reading. This is beyond the scope of the analysis of compensatory reading programs.

To cost these district services involves a mini-exercise of the total cost model. The important resource and utilization data were identified in the site visits. Together with the unit cost of these resources, the cost of the center can be estimated. However, the centers operated in such a variety of systems and the resources used as well as the service offered varied so much that it was not advantageous to utilize automatic computer calculations. Thus, the cost of each resource-related or student-related center is determined manually by an analyst using the data from the resource questionnaire, the site visits, and the results of the unit cost analysis.

The procedure used to calculate the cost of these centers is as follows. The relative proportion of the total cost that is for staff is calculated and averaged for all the site visit schools for which data on centers are provided. This is done by services provided in the case of resource centers. These proportions are then used to estimate the cost of non-site visit schools for which only staffing data exist. A list of all the centers reported by schools, both resource-related and student-related, has been constructed with the cost per school served for each one.

4

COST ANALYSIS RESULTS

For each of the 260 schools involved in this study, the program cost model was used to estimate both the cost of the reading program and the cost of the individual reading classes. These costs will be used later, in combination with the measures of program effectiveness, to evaluate the cost effectiveness of various instructional approaches and uses of resources. These results are not included in this report because of their volume. Instead, an example of model output is presented and discussed. In addition, the results from all schools are summarized, with statistically significant differences between schools identified.

In an effort to define a limited number of program types, ETS used factor analysis techniques in their Phase I report to identify a series of program clusters. The clusters were derived using five reading program indices: (1) emphasis on basic reading activities, (2) use of audio-visual equipment and materials, (3) emphasis on supplementary reading activities, (4) instructional flexibility, and (5) whether or not the compensatory reading program is offered during time released from other subjects. A complete discussion of the factor analysis is included in the ETS report.[1] The program clusters included ten for compensatory reading programs using the five reading indices, one "conglomerate" cluster for nonclassifiable compensatory programs, and one cluster for all schools with no identified compensatory programs. Each school in the study was assigned to one of the 12 clusters, depending on its program characteristics. This cluster information is included with the results of the cost analysis, and is an important basis for examining the results.

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[1] Rubin, Trismen, Wilder, and Yates, "A Descriptive and Analytic Study of Compensatory Reading Programs," Educational Testing Service, PR-73-28 (August 1973).

EXAMPLE MODEL OUTPUTS

For each school, two output formats are used to display the results of the program cost model. An example of these two formats, shown for school 317, is presented below. Because the 94 different kinds of resources considered in the study are too large a number to output separately, the resources are aggregated into five major resource categories and 18 minor resource categories in the model output. The first format presents an estimate of the total school reading program cost for all grades and classes, while the second format presents the reading program costs for individual classes in Grades 2, 4, and 6, which participated in the ETS Phase II evaluation. Each format is described below.

School Reading Program Costs

An example of the School Reading Program Costs, the first format, is presented in Table 4-1. This format describes the resources used in the total school reading program and estimates their cost. No attempt is made in this format to differentiate costs by grade or by compensatory or developmental programs. The total cost shown at the bottom is an estimate of the total cost of providing reading instruction in that school. In addition, an estimate is made of emphasis given by the school to the four tasks: instruction, diagnosis, training, and administration. As an example, according to the table, School 317 has been included in program Cluster 2. In addition, the compensatory reading program in the school receives no funding from Title I. Finally, there are 438 students in the entire school.

The first column of this format presents the total quantity of a resource available in the school. (Using the notation from Chapter 2 for Equations 2-1 through 2-6, this quantity is n.) From our example, there are 16 classroom teachers found in School 317.

The second column presents an estimate of the quantity or proportion of each resource used in the school reading programs. This estimate is calculated by the Program Allocation Submodel (np). In the example, we found that classroom teachers

Table 4-1

EXAMPLE OF SCHOOL READING PROGRAM COSTS

(1973 dollars)

SCHOOL: 932
PROGRAM CLUSTER: 3
FUNDING SOURCE: PARTIAL TITLE I
NUMBER OF STUDENTS: 437

	----QUANTITY----		------READING PROGRAM COST--------				------ANNUALIZED COST BY TASK-----			
RESOURCE	SCHOOL TOTAL	READING TOTAL	CAPITAL INVEST.	OPERAT.	ANNUALIZ COST	% OF TOTAL	INSTRUCT	DIAGNOST	STAFF DEVELOP	ADMIN
CLASSROOM TEACHER	19.00	2.47	.00	26999.13	26999.13	30.0	18696.98	4006.50	289.16	4006.50
TEACHER AIDE	3.50	1.75	.00	4950.75	4950.75	5.5	3948.88	246.80	14.65	740.41
READING SPECIALIST	1.00	.80	.00	9780.00	9780.00	10.9	3900.42	3900.42	516.50	1462.66
OTHER SPECIAL TEACHER	3.83	1.10	.00	12925.00	12925.00	14.4	5564.73	2343.04	1151.20	3866.03
NON-TEACHING ACADEMIC STAFF	.25	.01	.00	176.25	176.25	.2	.00	158.16	9.31	8.79
NON-TEACHING NON-ACADEM. STAFF	2.00	.73	.00	2225.95	2225.95	2.5	.00	.00	6.59	2219.36
SUPERVISION AND COORD. STAFF	1.20	.33	.00	6228.10	6228.10	6.9	124.88	249.77	825.00	5028.44
STAFF SUBTOTAL	30.78	7.19	.00	63285.18	63285.18	70.4	32235.89	10904.69	2812.41	17332.19
FACILITY SUBTOTAL	22.00	2.86	156756.60	4075.50	16177.11	18.0	10515.12	1617.71	1617.71	2426.57
TAPE RECORDER/RECORDER PLAYERS	44.00	22.00	1919.89	693.61	1123.21	1.2	1123.21	.00	.00	.00
TEACHING MACHINES	3.00	3.00	685.30	106.07	203.66	.2	183.30	20.37	.00	.00
MOVIE/FILMSTRIP PROJECTORS	19.00	10.75	1603.09	808.55	1009.41	1.1	1009.41	.00	.00	.00
SLIDE/OVERHEAD/OPAQUE PROJECT.	27.00	12.75	1568.84	150.54	373.93	.4	373.93	.00	.00	.00
TELEVISION/VIDEO TAPE PLAYERS	3.00	1.00	952.33	167.05	302.66	.3	302.66	.00	.00	.00
EQUIPMENT SUBTOTAL	96.00	49.50	6729.45	1925.82	3012.87	3.4	2992.51	20.37	.00	.00
BASAL READERS	600.00	600.00	3024.00	300.00	730.62	.8	657.56	73.06	.00	.00
INDIVIDUAL READING KITS	1050.00	1050.00	3076.50	304.50	742.56	.8	594.05	148.51	.00	.00
LIBRARY BOOKS	7000.00	7000.00	26250.00	2660.00	5542.60	6.2	5542.60	.00	.00	.00
OTHER SUPPLIES AND MATERIALS	437.00	56.31	.00	388.01	388.01	.4	388.01	.00	.00	.00
MATERIALS SUBTOTAL			32350.50	3652.51	7403.79	8.2	7182.22	221.57	.00	.00
TOTAL COST			195836.55	72939.01	89878.95	100.0	52925.74	12764.34	4430.12	19758.76
COST PER STUDENT			448.14	166.91	205.67		121.11	29.21	10.14	45.21

spend approximately 14 percent of their time teaching reading. Thus of the 16 classroom teachers, an amount of time equivalent to 2.2 full time teachers is utilized in the reading program.

The next three columns present the costs of the resources used in reading, and result from the costing submodel. Included are the capital costs (which for all staff resources equal zero), the annual operating cost, and the annualized cost. The annualized cost is the sum of the amortized capital cost (see Equation 1-1) and the operating cost.

The sixth column shows the percentage of the total annualized cost which each resource category represents. In the example output, the annualized cost for classroom teachers, \$30,874.80, is 48.0 percent of the total annualized cost, \$64,314.84.

The last four columns present the annualized cost of each resource category apportioned to the major educational tasks defined in Chapter 2. These results are obtained by operating the Task Submodel (nptc). Of the total annualized cost of \$30,874.80 for classroom teachers in our example, it was estimated that \$21,597.66 was used in actual instruction. The balance was divided between the other tasks as shown.

A detailed demonstration of the procedures involved in calculating the values on this table can be found in Appendix D.

Reading Program Costs by Class

An example of the second output format (i.e., Reading Program Costs by Class) is presented in Table 4-2. This format identifies and estimates the cost categories of resources used in the individual reading classes. These costs are presented on a per student basis. Total class costs can be derived by multiplying the model outputs by the number of students in each class. In addition to the cost outputs, the following items are identified for each class: the type of instructor, the number of students in each class, and whether or not the class was identified as being part of the compensatory

Table 4-2

EXAMPLE OF READING PROGRAM COSTS BY CLASS
(1973 dollars)

SCHOOL: 932
PROGRAM CLUSTER: 3
FUNDING SOURCE: PARTIAL TITLE I

	AVERAGE COST PER STUDENT FOR CLASSES WHERE TEACHERS COMPLETED QUESTIONNAIRES										
CLASS:	21	22	23	24	42	43	44	61	62	63	65
TYPE:	1	1	2	2	1	2	2	1	2	2	1
NUMBER OF STUDENTS:	26	28	12	10	26	14	14	24	13	12	22
COMPENSATORY (YES OR NO)	Y	Y	Y	Y	Y	N	N	N	N	Y	N
RESOURCE											
CLASS INSTRUCTOR	59.04	78.83	95.97	95.97	56.15	37.34	43.46	79.36	16.36	17.38	75.73
TEACHER AIDE	7.62	7.08	8.62	8.62	15.25	1.72	1.72	.00	17.24	17.24	10.81
READING SPECIALIST	22.38	22.37	22.37	22.37	22.38	22.37	22.37	22.38	22.37	22.37	22.37
OTHER SPECIAL TEACHER	29.57	29.57	29.57	29.57	29.57	29.57	29.57	29.57	29.57	29.57	29.57
NON-TEACHING ACADEMIC STAFF	.00	.00	.00	.00	.00	.00	.00	.00	2.87	.00	.60
NON-TEACHING NON-ACADEM. STAFF	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09
SUPERVISION AND COORD. STAFF	14.25	14.25	14.25	14.25	14.25	14.25	14.25	14.25	14.25	14.25	14.25
STAFF SUBTOTAL	137.95	157.19	175.87	175.87	142.69	110.34	116.46	150.65	107.75	105.90	158.42
FACILITY SUBTOTAL	36.33	33.73	41.07	41.07	27.84	24.59	24.59	39.35	8.11	9.83	49.87
TAPE RECORDER/RECORDER PLAYERS	2.24	2.08	2.54	2.54	2.24	1.27	1.27	1.21	1.27	2.54	1.59
TEACHING MACHINES	1.02	.00	1.15	1.15	.00	.00	.00	.22	.00	.00	.00
MOVIE/FILMSTRIP PROJECTORS	1.95	1.81	2.21	2.21	1.95	2.21	2.21	1.05	1.10	2.21	.23
SLIDE/OVERHEAD/OPAQUE PROJECT.	.64	.60	.73	.73	.64	.73	.73	.70	.73	.73	.15
TELEVISION/VIDEO TAPE PLAYERS	.63	.59	.72	.72	.63	.14	.14	.13	.72	.72	.45
EQUIPMENT SUBTOTAL	6.48	5.08	7.35	7.35	5.46	4.35	4.35	3.31	3.82	6.20	2.42
BASAL READERS	1.59	1.47	1.79	1.79	.00	1.79	1.79	.86	1.79	.18	.93
INDIVIDUAL READING KITS	1.61	.75	1.82	1.82	.80	1.82	.91	.87	1.82	.18	1.90
LIBRARY BOOKS	12.68	12.68	12.68	12.68	12.68	12.68	12.68	12.66	12.68	12.68	12.66
OTHER SUPPLIES AND MATERIALS	.88	.88	.88	.88	.88	.88	.88	.88	.88	.88	.88
MATERIALS SUBTOTAL	16.76	15.78	17.17	17.17	14.36	17.17	16.26	15.29	17.17	13.92	16.39
TOTAL COST	197.52	211.78	241.46	241.46	190.35	156.45	161.66	208.60	136.85	135.85	227.10

reading program. Each class in the school is identified by a unique two-digit number. Second-grade classes can be numbered between 20 and 39, fourth grade between 40 and 59, and sixth grade between 60 and 79. Other than indicating grade, the class number has no special meaning.

The information pertaining to each class is listed vertically under the class identifying number. From our example, Class 22, a second grade class, is taught by a Type 1 teacher (a regular classroom teacher), contains 24 students, and is not part of the compensatory reading program. The equivalent of $16.43 is spent per student (or a total of 24 x $16.43 = $394.32) for teacher aides to assist this class during the instruction of reading.

Appendix D contains detailed demonstration of the procedures involved in calculating the values on this table.

Program and Grade Averages

The total program cost for the school, shown on Table 4-1, makes no attempt to differentiate costs between the compensatory reading program and the developmental program. Nor is an attempt made to differentiate costs between grades. However, these differentiations are indicated in the individual class costs, Table 4-2. Using these class costs, we can calculate a weighted average cost for both the compensatory and developmental reading program for Grades 2, 4, and 6. For School 317, the average total costs have been calculated, and are shown in Table 4-3. For each combination of program and grade, these numbers were calculated by summing the total class cost (cost per student times the number of students in the class) and dividing by the total number of students in all classes in this combination.

Table 4-3

AVERAGE READING COSTS PER STUDENT BY PROGRAM AND GRADE FOR SCHOOL 317[a]

	Compensatory Program	Developmental Program
Second Grade	$179.99	$119.84
Fourth Grade	$118.52	$ 98.89
Sixth Grade	$ 99.85	$117.99
ALL GRADES	$133.15	$108.84

a. Total cost for all resources.

Total vs Incremental Costs

As discussed in Chapter 1, total program cost is the most appropriate format for comparing alternative program costs for basic policy evaluations. For this reason, the costs shown in the two model outputs present total program cost. From a local school administrator's point of view, however, the availability of inherited assets might affect the costs sufficiently to alter the results of a cost effectiveness analysis based on total program costs. The level of detail contained in these tables will allow some investigation into the impact of inheriting facilities and equipment in future cost effectiveness analysis by simply subtracting out the inherited resource. From our example, the incremental cost of the reading program in School 317, considering facilities as inherited, is $49,483.94 (i.e., $64,314.84 - $14,830.90).

READING PROGRAM COSTS RESULTS

Using the techniques demonstrated above, grade and program averages were calculated for all 260 schools in the sample for each of the cost categories. A composite average was then calculated for all schools using various combinations of grades, programs, funding sources, and clusters. In addition, the standard deviation was calculated for this composite average across schools. Finally, the quartile points were determined to present additional information as to the shape of the distribution of school averages around the composite mean. The results of these calculations are presented in detail in Appendix E, and summarized in several tables in this chapter.

Table 4-4 gives the results of an investigation of the average school costs per student considering all grades for each of the funding sources. This table includes only those 200 schools identified as having a compensatory reading program. Of these schools, 140 also had separate developmental reading programs. This division in program is maintained in Table 4-4. This table shows that cost category for cost category, more money is spent per student for a compensatory reading program than for a developmental reading program in the same school. In fact, the average compensatory reading program is approximately 50 percent higher in cost than the developmental program in the same school.

Table 4-4 also shows that approximately 85 percent more money is spent for compensatory reading programs funded fully by Title I, than for programs receiving no Title I funding. Programs partially funded by Title I funds spend approximately 35 percent more money than do programs receiving no Title I funding.

Table 4-4

SUMMARY OF AVERAGE READING COST PER STUDENT FOR ALL SCHOOLS WITH COMPENSATORY READING PROGRAMS AND FOR ALL GRADES

(1973 dollars)

	-----TOTAL TITLE I----		-----PARTIAL TITLE I----		-----NON TITLE I----		----UNKNOWN----		----ALL SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	50		32		36		82		200	
CLASS INSTRUCTOR	144.66	151.45	99.94	74.00	72.13	46.72	102.13	109.97	107.01	111.36
TEACHER AIDE	25.81	44.93	13.77	15.60	5.46	7.27	6.26	11.12	12.20	25.77
READING SPECIALIST	19.30	27.63	16.18	20.11	9.41	12.65	28.99	71.22	20.99	48.98
OTHER STAFF	22.53	20.57	28.09	27.79	19.32	20.90	27.32	42.80	24.80	32.53
STAFF SUBTOTAL	212.30	154.78	157.95	85.04	106.31	50.51	164.69	137.23	165.00	127.80
FACILITIES SUBTOTAL	66.55	66.19	47.88	34.66	34.33	21.52	49.71	58.23	50.86	53.30
EQUIPMENT SUBTOTAL	5.83	6.25	2.91	1.85	3.15	2.59	4.07	4.61	4.16	4.60
MATERIALS SUBTOTAL	12.96	8.64	11.96	6.09	11.77	5.34	16.55	28.03	14.06	18.80
DISTRICT CENTER SUBTOTAL	5.15	12.71	3.92	8.15	7.65	11.59	3.46	6.43	4.71	9.64
TOTAL COST	302.79	229.16	224.63	116.92	163.20	73.48	238.48	195.95	238.79	183.67
LOW	86.17		99.51		72.83		78.13		72.83	
1ST QUARTILE	149.65		152.25		99.90		135.42		133.66	
2ND QUARTILE	231.07		188.11		145.26		180.93		182.58	
3RD QUARTILE	349.29		287.76		212.52		264.18		267.97	
HIGH	1125.60		572.43		364.70		1396.59		1396.59	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	38		20		28		54		140	
CLASS INSTRUCTOR	69.66	36.18	63.01	21.79	65.67	37.85	66.02	33.50	66.51	33.53
TEACHER AIDE	11.39	32.49	11.33	18.70	7.03	11.05	3.65	6.03	7.52	19.46
READING SPECIALIST	14.06	23.20	15.37	27.90	6.16	13.00	17.64	37.71	14.05	28.97
OTHER STAFF	23.54	20.98	23.06	27.98	16.37	18.26	25.35	36.44	22.73	28.39
STAFF SUBTOTAL	118.65	66.34	112.76	57.02	95.23	51.06	112.65	68.96	110.81	63.27
FACILITIES SUBTOTAL	33.92	19.80	31.63	11.75	31.68	17.80	31.43	17.09	32.19	17.24
EQUIPMENT SUBTOTAL	2.60	2.76	5.41	10.17	3.08	2.67	2.32	1.85	2.99	4.46
MATERIALS SUBTOTAL	14.46	8.71	13.07	5.71	12.01	5.92	15.54	25.83	14.19	16.96
DISTRICT CENTER SUBTOTAL	4.91	13.72	1.56	3.68	7.41	12.39	3.99	6.91	4.57	10.15
TOTAL COST	174.54	87.03	164.43	67.89	149.41	74.56	165.93	93.24	164.75	84.35
LOW	83.85		78.14		72.40		53.68		53.68	
1ST QUARTILE	137.98		116.24		102.27		117.90		115.40	
2ND QUARTILE	153.87		163.06		123.18		138.60		143.75	
3RD QUARTILE	199.12		179.53		161.17		183.98		187.03	
HIGH	615.75		352.23		384.95		545.74		615.75	

Finally, an examination of the standard deviations and the quartile ranges will show that there is a great deal of variation between schools. The ratio of the standard deviation to the mean is approximately 0.75, while the ratio of the maximum value to the mean is approximately five. Both of these indicate that the distribution of actual costs is extremely wide, with little concentration about the mean. This high variation is characteristic of all the results from the program cost model, and is the result of the wide variation in the definition of compensatory programs. Despite this, we will show later that many of these observed differences can be classified in statistically significant ways. In addition, the variance in cost is not necessarily bad. It may be possible to explain wide variations in effectiveness by corresponding variation in program cost.

Table 4-5 shows the results of an investigation of the average school costs per student by grade. As in the previous table, only those 200 schools with identified compensatory reading programs are presented. No separation is made by funding source. Apparently compensatory reading programs vary little by grade, while about 25 percent more money is spent on second grades in developmental programs than in fourth or sixth grades.

Table 4-6 is similar to the previous table except that it presents the average school costs per student for the 45 schools with no identified compensatory reading program. For this reason, only the cost of the developmental reading program is shown. We will show later that these costs, considering their variability, are not significantly different from the costs of developmental reading programs in schools with compensatory programs. Notice again that approximately 25 percent more money is spent for the second grade.

Table 4-7 presents the average school cost for each of the 12 clusters defined by ETS. Grades and funding sources are not considered. As before, differentiation is made between compensatory and developmental reading programs. Cluster 12, which is composed of the 45 schools without identified compensatory programs, is present as the last cluster in each type of program for illustrative purposes. Although the range in quartiles is presented, the standard deviations have been eliminated for space reasons. They can be determined, along with a more detailed analysis of average school costs, in Appendix E.

Table 4-5

SUMMARY OF AVERAGE READING COSTS PER STUDENT FOR ALL SCHOOLS WITH COMPENSATORY READING PROGRAMS AND ALL FUNDING SOURCES

(1973 dollars)

	----GRADE 2-----		----GRADE 4-----		----GRADE 6-----		---ALL GRADES---	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS								
NO. OF SCHOOLS	162		166		128		200	
CLASS INSTRUCTOR	112.93	126.77	108.21	117.06	102.10	111.81	107.01	111.36
TEACHER AIDE	13.71	24.21	12.80	31.55	14.35	39.84	12.20	25.77
READING SPECIALIST	20.29	50.34	18.82	50.42	21.85	56.76	20.99	48.98
OTHER STAFF	23.95	35.26	23.18	23.65	26.29	35.07	24.80	32.53
STAFF SUBTOTAL	170.88	147.40	163.01	129.04	164.60	143.96	165.00	127.40
FACILITIES SUBTOTAL	53.68	60.26	50.96	52.93	47.62	46.86	50.86	53.30
EQUIPMENT SUBTOTAL	4.18	4.47	4.01	4.76	4.34	5.41	4.16	4.60
MATERIALS SUBTOTAL	13.32	14.72	14.48	20.41	14.14	16.20	14.06	18.80
DISTRICT CENTER SUBTOTAL	5.00	9.61	4.34	8.39	4.39	8.61	4.71	9.64
TOTAL COST	247.06	209.45	236.81	184.64	235.09	193.17	238.79	183.67
LOW	54.57		55.68		43.31		72.83	
1ST QUARTILE	131.19		124.59		118.96		133.66	
2ND QUARTILE	189.06		178.81		170.39		182.58	
3RD QUARTILE	262.82		267.64		276.54		267.97	
HIGH	1396.59		1400.19		1278.87		1396.59	
DEVELOPMENTAL READING PROGRAMS								
NO. OF SCHOOLS	97		96		96		140	
CLASS INSTRUCTOR	81.38	50.47	61.64	28.33	57.88	24.67	66.51	33.53
TEACHER AIDE	8.09	22.63	4.17	8.06	4.61	7.88	7.52	19.46
READING SPECIALIST	14.00	33.06	12.96	31.56	11.33	19.94	14.05	28.97
OTHER STAFF	20.44	30.08	23.11	33.72	23.86	30.55	22.73	28.39
STAFF SUBTOTAL	123.91	82.95	101.88	56.13	97.68	54.23	110.81	63.27
FACILITIES SUBTOTAL	39.61	24.11	29.93	12.43	26.89	10.30	32.19	17.24
EQUIPMENT SUBTOTAL	3.44	5.28	2.45	2.11	2.36	2.23	2.99	4.46
MATERIALS SUBTOTAL	15.01	19.97	12.92	6.74	12.57	6.60	14.19	16.96
DISTRICT CENTER SUBTOTAL	4.59	11.27	4.36	10.07	4.16	9.85	4.57	10.15
TOTAL COST	186.55	111.18	151.53	65.97	143.67	64.74	164.75	84.35
LOW	53.04		32.61		30.46		53.68	
1ST QUARTILE	119.66		109.50		105.77		115.40	
2ND QUARTILE	155.54		133.40		126.75		143.75	
3RD QUARTILE	207.32		180.38		168.64		187.03	
HIGH	758.18		380.77		515.23		615.75	

Table 4-6

SUMMARY OF AVERAGE READING COST PER STUDENT FOR ALL SCHOOLS WITH NO COMPENSATORY READING PROGRAMS

(1973 dollars)

	----GRADE 2-----		----GRADE 4-----		----GRADE 6-----		---ALL GRADES---	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
DEVELOPMENTAL READING PROGRAMS								
NO. OF SCHOOLS	41		37		32		45	
CLASS INSTRUCTOR	69.84	33.46	62.01	24.24	50.07	21.26	62.52	26.21
TEACHER AIDE	9.47	14.43	6.06	9.80	7.05	13.70	7.58	12.03
READING SPECIALIST	17.03	26.70	13.77	24.28	14.83	30.63	16.90	23.47
OTHER STAFF	18.15	16.23	17.91	16.78	15.09	10.23	17.45	13.70
STAFF SUBTOTAL	114.49	53.12	99.75	47.16	87.03	45.51	104.46	46.59
FACILITIES SUBTOTAL	35.21	18.16	30.85	13.04	23.92	9.05	31.09	14.62
EQUIPMENT SUBTOTAL	4.14	2.47	3.36	3.04	2.65	1.67	3.31	1.87
MATERIALS SUBTOTAL	13.47	7.08	13.17	6.73	12.67	7.53	12.97	6.48
DISTRICT CENTER SUBTOTAL	2.90	6.80	3.58	7.27	4.20	7.77	3.14	6.77
TOTAL COST	170.20	69.07	150.72	58.58	130.47	52.96	154.97	59.77
LOW	67.06		72.94		50.81		64.94	
1ST QUARTILE	121.86		102.53		97.34		115.64	
2ND QUARTILE	158.08		138.07		117.25		149.19	
3RD QUARTILE	204.37		173.32		150.98		173.11	
HIGH	408.76		313.51		265.77		408.76	

Table 4-7

SUMMARY OF AVERAGE READING COST PER STUDENT BY CLUSTER

(1973 dollars)

Cluster	1	2	3	4	5	6	7	8	9	10	11	12[a]
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	29	28	15	36	14	18	2	12	8	17	21	45
CLASS INSTRUCTOR	104.97	115.27	206.94	75.76	174.79	76.06	80.34	88.19	84.24	94.66	94.31	62.52
TEACHER AIDE	11.00	12.73	12.94	9.12	7.09	7.12	10.08	40.05	16.30	8.89	11.12	7.58
READING SPECIALIST	25.83	26.21	7.64	19.43	9.67	18.83	65.18	29.39	24.95	29.60	11.44	16.90
OTHER STAFF	25.83	24.85	19.10	15.58	26.14	29.15	18.74	28.02	22.03	53.49	15.18	17.45
STAFF SUBTOTAL	167.63	179.07	246.61	119.88	217.69	131.16	174.35	185.64	147.52	186.63	132.04	104.46
FACILITIES SUBTOTAL	47.81	53.69	95.61	36.26	89.66	36.51	31.06	47.22	40.09	45.17	43.47	31.09
EQUIPMENT SUBTOTAL	4.59	4.21	8.11	3.27	4.24	3.26	5.62	3.23	5.18	4.31	2.79	3.31
MATERIALS SUBTOTAL	11.63	16.82	15.23	12.12	28.98	11.18	22.64	11.44	10.43	14.33	10.55	12.97
DISTRICT CENTER SUBTOTAL	7.57	2.14	3.34	4.95	2.80	1.01	4.16	7.29	4.31	9.20	4.31	3.14
TOTAL COST	239.23	255.94	368.91	176.48	343.37	183.12	237.84	254.82	207.52	259.64	193.17	154.97
LOW	87.09	73.42	157.71	80.67	123.34	72.83	165.37	99.74	132.00	128.87	78.13	64.94
1ST QUARTILE	117.83	130.85	241.18	101.36	160.56	103.86	201.61	163.56	136.15	170.00	149.07	115.64
2ND QUARTILE	187.81	180.93	323.73	153.68	248.39	140.50	237.84	224.92	184.21	187.57	168.11	149.19
3RD QUARTILE	241.99	274.37	393.38	191.03	391.92	210.13	274.08	274.99	260.67	272.43	222.96	173.11
HIGH	1016.50	871.13	1125.60	670.74	1396.59	488.61	310.32	498.38	349.45	850.49	424.25	408.76
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	15	22	14	26	9	14	2	7	8	8	15	45
CLASS INSTRUCTOR	76.12	59.87	67.37	49.49	101.25	67.10	56.14	67.55	50.97	85.13	73.19	62.52
TEACHER AIDE	16.94	6.88	1.43	6.49	4.00	6.43	10.08	11.72	11.68	6.45	5.71	7.58
READING SPECIALIST	29.28	5.73	6.65	7.96	0.76	32.12	35.78	23.72	28.49	11.52	5.80	16.90
OTHER STAFF	25.80	21.30	17.95	12.84	30.07	33.45	18.74	15.74	23.19	53.69	16.02	17.45
STAFF SUBTOTAL	148.13	93.78	93.40	76.78	136.07	139.11	120.75	118.73	114.34	156.79	100.72	104.46
FACILITIES SUBTOTAL	36.41	29.32	33.00	23.89	50.52	33.59	24.97	30.41	25.09	39.32	35.25	31.09
EQUIPMENT SUBTOTAL	3.34	2.71	3.44	2.28	2.09	2.89	2.85	2.46	7.53	3.40	2.12	3.31
MATERIALS SUBTOTAL	10.53	13.35	16.88	12.11	33.68	12.40	22.80	15.11	11.38	13.78	10.28	12.97
DISTRICT CENTER SUBTOTAL	8.84	1.79	3.58	4.88	2.07	1.25	4.16	6.53	4.71	9.91	5.61	3.14
TOTAL COST	207.25	140.96	150.31	119.93	224.43	189.25	175.53	173.24	163.05	223.20	153.98	154.97
LOW	118.07	96.72	86.74	53.68	108.33	76.80	139.64	108.69	95.13	[illegible].84	75.29	64.94
1ST QUARTILE	142.97	105.44	119.19	89.31	141.50	136.58	157.58	142.43	123.79	144.27	106.71	115.64
2ND QUARTILE	165.78	122.13	152.46	119.77	199.92	176.30	175.53	162.36	145.20	201.77	141.57	149.19
3RD QUARTILE	198.06	159.23	179.63	138.44	207.32	207.89	193.48	198.87	177.42	255.15	155.44	173.11
HIGH	615.75	315.08	199.55	203.79	545.74	366.20	211.43	259.02	299.12	499.70	384.95	408.76

a. Cluster 12 is composed of schools without any compensatory program. The same totals are presented against both types of programs for comparison purposes only.

ANALYSIS OF VARIANCE

Because of the large variation associated with the mean values given above, we conducted an analysis of variance (ANOVA) to determine if the differences were statistically significant. We conducted six such analyses to complement Tables 4-4 through 4-7, where the mean costs between funding sources, grades, and clusters were investigated. For simplicity, only the major cost categories were examined.

Two measures result from such an analysis of variance: the F test, and R^2 test. The F test is calculated as the ratio of the amount of variation between schools which can be explained by grouping the schools in a particular way (such as by funding source) to the amount of variation that cannot be explained by this grouping. Obviously, as this ratio becomes greater, it is more likely that differences between group means are statistically significant and do not result from random sample errors. At a critical value of this ratio, as determined from an F distribution[2] and the degrees of freedom, the likelihood of the means not being significantly different becomes remote. In this study, this critical value is the ratio at which only 5 percent of the time the differences between the means will be due to random sample error. Above this critical value, called the 0.05 level, the differences between the means are considered statistically significant.

The R^2 statistic, called the coefficient of determination, measures the strength of the differences between group means. It is calculated as the ratio of the explained variation to the total observed variation. The higher this ratio, the higher the likelihood of being able to predict the cost of a program just by determining in which group it is located. In the analysis of reading program costs, the R^2 statistic measures the proportion of the total variation in program costs which is explained by the program groups. As an example, suppose that two groups of school costs whose difference in means is statistically significant are being considered. A high R^2 would mean that a school from the group with the higher mean would very likely have a high cost because there is a sharp division between the cost of the two groups. Conversely, a low R^2 would mean that a school from the group with the higher mean could have a low cost, because the division is not sharp between the two groups (i.e., the distributions overlap).

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[2] Dixon and Massey, "Introduction to Statistical Analysis," McGraw Hill (1957).

The first analysis of variance performed was designed to investigate the difference between the costs of compensatory and developmental reading programs. The results of this ANOVA are shown in Table 4-8. Only the 200 schools with an identified compensatory program were considered. The costs of these compensatory programs were compared to the 140 developmental programs in the same schools. As can be seen on this table, there are significant differences between the two types of programs for all major cost categories except materials and district centers. From Table 4-4, it was found that compensatory programs averaged approximately 50 percent more than developmental programs.

Table 4-8

ANALYSIS OF VARIANCE BETWEEN
COMPENSATORY AND DEVELOPMENTAL READING PROGRAMS[a]

Major Cost Category	F Test[b]	R^2 Test
Staff	21.47[c]	.060
Facilities	16.18[c]	.046
Equipment	5.46[c]	.016
Materials	0.06	.001
District Centers	0.02	.001
Total Cost	19.80[c]	.055

a. Includes the 200 compensatory programs and 140 developmental programs in the 200 schools with identified compensatory reading programs.

b. Degrees of freedom are 1 and 338.

c. Significant differences between program cost of 0.05 level.

The relatively low R^2 associated with these costs, however, indicates that while there is a significantly higher average cost for compensatory reading programs, there is a great deal of variability associated with the cost within each classification, and a significant overlapping of their respective cost ranges. This high variability, which was discussed previously in regard to the high standard deviations resulting from the cost model, is characteristic and will be observed in all the ANOVA tables presented in this chapter. This low R^2, however, is not an indication of a lack of validity in the cost results. In this particular case, the only meaningful interpretation of the low R^2 is that it is nearly impossible to estimate correctly the cost of a program knowing only whether or not it is compensatory, without having additional information as to the quantity of resources used in the program. Given the variation in program resources, and the manner in which the distinction between compensatory and developmental programs was made, this is not an unexpected result.

Table 4-9 presents the results of an analysis of variance between funding sources. Because of the significant differences between compensatory and developmental programs determined above, a separate analysis of variance was performed for both programs. It can be seen that significant differences do occur in most of the major cost categories of compensatory reading programs funded from different sources. Previously, it was shown that Title I funded programs spent approximately 85 percent more money than programs receiving no Title I funds. On the other hand, we see from Table 4-9, that the costs of the developmental programs are not significantly different across funding sources. This supports the hypothesis that Title I funds are being used primarily for the compensatory reading programs, and not for the developmental classes.

Table 4-10 presents the results of an analysis of variance between grades. Again, compensatory and developmental reading programs are separated. It can be seen that no significant differences occur in the different grades of a compensatory program. However, there does appear to be some significant differences in cost between grades in the developmental programs. This appears to be caused by the drop-off in reading instruction given to higher grades where no compensatory reading is required.

Table 4-9

ANALYSIS OF VARIANCE BETWEEN FUNDING SOURCES[a]

Major Cost Category	Compensatory Programs[b]		Developmental Programs[c]	
	F Test	R^2 Test	F Test	R^2 Test
Staff	9.18[d]	.138	1.26	.030
Facilities	4.79[d]	.077	0.173	.004
Equipment	5.76[d]	.091	1.82	.042
Materials	0.35	.006	0.93	.022
District Centers	0.98	.017	1.45	.034
Total Cost	7.52[d]	.116	0.81	.019

a. Includes 118 schools with compensatory reading programs and identified program funding sources. The 82 schools with no identified funding sources were excluded.

b. Degrees of freedom for compensatory programs is 2 and 115.

c. Degrees of freedom for developmental programs is 2 and 82.

d. Significant differences between the program costs of the various funding sources at 0.05 level.

Table 4-10

ANALYSIS OF VARIANCE BETWEEN GRADES[a]

Major Cost Category	Compensatory Programs[b]		Developmental Programs[c]	
	F Test	R^2 Test	F Test	R^2 Test
Staff	.14	.001	4.43[d]	.030
Facilities	.45	.002	15.14[d]	.096
Equipment	.17	.001	2.78	.019
Materials	.19	.001	1.03	.007
District Centers	.27	.001	0.04	.001
Total Cost	.17	.001	7.21	.048

a. Including 200 schools with compensatory reading programs.

b. Degrees of freedom for compensatory programs is 2 and 455.

c. Degrees of freedom for developmental programs is 2 and 288.

d. Significant differences between program costs in the various grades at 0.05 level.

Table 4-11 presents the results of an analysis of variance results between the ETS definition of program clusters. In this analysis, all schools were considered, including the schools with no identified compensatory reading programs (i.e., cluster 12). It can be seen that for most of the cost categories, a significant difference between clusters was observed for both compensatory and developmental reading programs.

Table 4-11

ANALYSIS OF VARIANCE BETWEEN CLUSTERS[a]

Major Cost Category	Compensatory Programs[b]		Developmental Programs[c]	
	F Test	R^2 Test	F Test	R^2 Test
Staff	2.84[d]	.118	2.81[d]	.152
Facilities	3.37[d]	.137	2.28[d]	.127
Equipment	1.97[d]	.08	1.22	.072
Materials	1.39	.06	1.84	.105
District Centers	1.79	.08	0.98	.059
Total Cost	2.78[d]	.116	2.70[d]	.146

a. All schools in sample considered.

b. Degrees of freedom for compensatory programs is 11 and 233.

c. Degrees of freedom for development programs is 11 and 173.

d. Significant differences between program costs in the various clusters at 0.05 level.

An additional analysis of variance was performed which compared the costs of the developmental programs in schools which had identified a compensatory reading program to the reading costs in schools with no identified compensatory programs. The analysis did not detect any significant differences in costs. This result can be interpreted to mean that the costs of developmental programs in schools with compensatory programs are similar to the costs of the reading programs in schools with no compensatory reading programs.

A final analysis of variance was conducted to check the validity of using school averages rather than using individual class average in future analyses. This investigation was conducted on all schools in the study with a distinction made between compensatory and developmental programs. The analysis examined the variation in costs between schools and within schools. The ANOVA results showed that there were significantly greater cost differences between schools than within schools for both types of programs. This difference was strong, with a relatively high R^2, averaging approximately 0.7, for all cost categories. For this reason, we feel entirely justified in using school averages in future analyses.

CONCLUSIONS

Reviewing the results presented above, certain conclusions regarding the cost output can be reached. They are listed below:

1. Costs of compensatory programs are about 50 percent higher than reading programs in non-compensatory schools.
2. Costs of compensatory programs are also about 50 percent higher than the developmental programs in the same schools.
3. Costs of compensatory programs in total and partial Title I schools and 85 and 35 percent more expensive than compensatory programs in schools with no Title I funding, respectively.
4. Costs of developmental programs in schools which have Title I funded compensatory programs are not significantly higher than developmental programs in schools with non-Title I funded compensatory programs.
5. There are no significant differences in cost between grades in compensatory programs.
6. The costs of developmental programs in the second grade are approximately 25 percent higher than either grades four or six.
7. Cost variation between program clusters is statistically significant for both compensatory and developmental programs.
8. Variation of reading program costs between schools is higher than between classes within schools for both compensatory and developmental programs.

5

ASSESSMENT AND RECOMMENDATIONS

The previous chapters of this report have described the cost model, developed the cost base, and presented a summary of the results. This chapter will assess the credibility of the model by investigating its potential sources of errors in data collection and model assumptions. In addition, this chapter will recommend ways in which future studies of this nature might better estimate the cost of educational programs.

ASSESSMENT OF POTENTIAL SOURCES OF ERRORS

In a cost model such as the one developed in this report, a great deal of effort is directed toward collecting quantitative data and developing a detailed set of procedures for estimating the model parameters. As in any type of quantitative analysis, however, many potential sources of error have been incorporated into the model. In general, these potential errors are of two types. First, there is a measurement error, or the error associated with collecting data. Individuals completing questionnaires may not answer questions accurately. Quantitative questions, such as the number of tape recorders, may be answered without reference to an inventory list, and thus may only be approximations. Even if inventory lists are used, the inventory may change during the year due to new purchases or failures. Since the questionnaire is completed only once, the response is representative of the situation existing at that time. Qualitative questions, such as whether or not a teacher uses a piece of equipment often, can also change with time. In addition, the definitions of terms in such qualitative questions are often somewhat vague (e.g., what does often really mean). The interpretation of such questions can vary from teacher to teacher, introducing potential error.

The second type of error involves the computational procedures used in the model. The cost model, in reality, is a series of decision rules or procedures for allocating the costs of the various resources to programs and classes. Each of these decision rules is based on information and assumptions about the operation of the school reading program. Certain decision rules are made to simplify the required calculations. For example, principals were allocated to the reading program in proportion to the amount of time the average teacher spent in reading. In some cases, decision rules are developed in the absence of substantial data. This was true of the allocation of reading specialists. Because of the lack of definition as to who a reading specialist was, and the serious question as to whether or not the reading specialist completed a questionnaire, a comprehensive series of decision rules had to be developed for the reading specialist. In all cases, decision rules are developed which satisfy the "criterion of reasonableness." However, there are no statistical techniques for measuring this reasonableness associated with the decision rules. Other individuals might feel that alternative decision rules are more reasonable, and thus more accurate.

It is difficult to evaluate the true error associated with the results because of the many imponderables associated with the data and the decision rules. However, it would be possible to evaluate the sensitivity of the results to measure errors and changes in decision rules. This procedure, called sensitivity analysis, involves recalculating the model outputs after changing the data or decision rules. These changes would be made one at a time, and the results would be compared to the initial results. The result of such a sensitivity analysis would indicate the relative change in the output that is caused by a change in the input. Inputs for which the model is particularly sensitive would receive special attention to insure their accuracy.

The cost model developed in this report involves five variables: quantity (n), program factor (p), class factor (r), task factor (t), and standard cost (c). Associated with each of these variables are potential sources of error in the collection of data and/or the decision rules used in calculating the variables. A complete list of all such errors is too extensive to list here, because it involves every data point and every decision rule. However, it is possible to identify a series of critical model inputs and model decision rules. These potential sources of error are identified for each of the five variables in Table 5-1. Also shown are the types of sensitivity analyses that could be performed to determine whether or not these potential sources of error significantly affect the model results. A more detailed discussion of the sources of data and a justification of the decision rules can be found in Chapters 2 and 3.

Although it does not completely eliminate the need of some sensitivity analyses, remember that certain types of errors tend to be canceled out in the actual operation of the model. First, decision rules are generally applied uniformly across all school and programs. A particular assumption may tend to over- or underemphasize a resource. For example, suppose the use of the average teacher program factor for allocating a principal to the reading program in fact overemphasizes the importance of the principal to the reading program. In an absolute sense, the total cost of the program may have a significant error. However, in a relative sense, the same error is associated with all schools. Because the cost effectiveness analysis will be performed on a relative basis, the error is of lesser importance. In fact, when the impact of resources on effectiveness is examined individually, the supposed overemphasis of the principal will have no effect on other resources. Although the possible overemphasis of principals would be included in the results of the individual analysis of principal cost effectiveness (on an effectiveness per dollar basis), the results would at least show whether or not the principal contributes anything at all to the effectiveness of a program.

A second type of error cancellation takes place because school averages are going to be used in the cost effectiveness analysis, rather than the individual class costs. When the errors are random, such as would be associated with measurement errors in the teacher questionnaires, the errors are both positive and negative for specific resources and tend to cancel out when they are averaged out over all classrooms.

As discussed in Chapter 4, statistically significant differences in the cost of the various programs have been identified in the model outputs. Because the errors generally are either compensated, by applying the decision rules uniformly, or

Table 5-1

SOURCES OF POTENTIAL MODEL ERROR

Source	Methods For Testing Impact
General	
1. Missing data in Resource Questionnaires were entered after follow-up procedures failed, with sample averages.	Use only those schools with complete information about a resource when investigating that resource.
2. Missing data in both the Teacher and Program Characteristics Questionnaires were entered using the average value for teachers in the same grade and school.	Use only those classes with complete information about a resource when investigating that resource.
3. Where the response in a questionnaire was a range of value, the midpoint was used.	Test sensitivity of cost outputs to variation over full range of measurement.
Quantity (n)	
4. The inventory of staff, equipment, and materials from the Resource Questionnaires is subject to error.	Test sensitivity of output to percentage changes in quantity.
5. Each class instructor is assumed to have the same sized classroom.	Test sensitivity of output to the use of classrooms based on class size.
Program Factors (p)	
6. A regular classroom teacher is considered to teach a total of 30 hours per week for the purpose of calculating the percentage of time in the reading program.	Test sensitivity of output to variation in instructional period from 25 to 35 hours.
7. A regular classroom teacher who appeared to misunderstand the question regarding the length of the reading period was assigned a higher value based on other questions in the questionnaire.	Test sensitivity of output by either eliminating this class, or using the average school-wide reading period length.
8. The staff program factors determined in the Resource Questionnaire have high variability.	Test sensitivity of output to a percentage change in all factors.
9. Except where costs are fully dedicated, administrative and overhead expenses are allocated to the reading program in proportion to the average time the classroom teacher spends teaching reading.	Test sensitivity of output to a series of fixed percentages.

Table 5-1 (Continued)

Source	Methods For Testing Impact
Class Factors (r)	
10. Reading specialists who completed questionnaires for a particular class are allocated only to those classes, while those specialists who did not complete questionnaires are allocated to all classes in the grades they teach.	Separate the schools where reading specialists completed questionnaires from those that did not tie reading specialists to particular classes and compare results.
11. Reading specialists who completed a Teacher Questionnaire are allocated to their students uniformly (i.e., same average cost per student).	Test sensitivity of allocating cost uniformly to classes (i.e., same cost per class and independent of number of students).
12. Reading specialists who did not complete a questionnaire were allocated uniformly to all students in the grades they teach, not just the compensatory classes.	Test sensitivity of allocating costs to just the compensatory classes.
13. Resources shared uniformly by all classes are allocated uniformly to each student (i.e., the same cost per student).	Test sensitivity of allocating costs by class (i.e., same cost per class).
14. Resources not shared uniformly are allocated to classes on a ratio of 10:5:1 basis, depending on whether the class use was often, sometimes, or rarely.	Test sensitivity of varying ratio. Alternative ratios might be 14:5:1, 10:6:1, etc.
15. A reading specialist who indicated the same use of a resource as a regular classroom teacher--in terms of often, sometimes, or rarely--in fact uses the resource five times more often.	Test sensitivity of using a factor of either 4 or 6.
Task Factors (t)	
16. Task factors were determined informally during site visits, and are designed to provide some basic insight into the emphasis schools give to the tasks.	Test sensitivity of minor changes in task factors to see if significant changes occur in the costs by task. In particular, check to see if the rank ordering of tasks changes.
Unit Costs (c)	
17. Study averages were used for costs of staff, facilities, equipment, and materials. Considerable variation was observed in the actual cost of all resources.	Test sensitivity on results of varying the standard cost, particularly of teachers.
18. Average discount and useful life factors were used for equipment.	Test sensitivity of varying discount and useful life of equipment.

canceled, by using school averages, we think the present output is a reasonable estimate of the true costs of the reading instruction. For this reason, we recommend that cost effectiveness analysis be started using the results of the cost analysis.

RECOMMENDATIONS FOR FUTURE STUDIES

The cost analysis presented in this report represents an initial attempt to develop detailed cost estimates of the entire reading program in a school by class using the resource approach. We feel that we have succeeded in accomplishing our goal of developing credible estimates. However, as pointed out previously, there are incorporated in the analysis potential sources of error. Often, these sources of error are the result of limitation imposed by the lack of more definitive data. This lack of data is understandable, considering that this is the initial attempt at such a comprehensive cost analysis. However, if future studies of a similar nature are contemplated, several recommendations can be made to eliminate or greatly reduce some of the sources of error, as well as to simplify aspects of the data collection procedures.

Of prime importance in future analyses should be an effort to obtain a more complete understanding of the overall dimensions of the school reading program, particularly with regard to how the teacher schedules her day. We suggest that at least one open-ended question in the teacher questionnaire be directed to this area. With definitive direction, such an open-ended question would help to resolve some of the vagaries associated with individual school terminology.

More consideration should be given to subjects other than reading to better identify the amount of time actually spent in reading. An effort should be made to recognize and identify more definitively multigrade classes (our Type 2 instructors) and instructors with several classes (our Types 3 and 4 instructors). If the emphasis that a school places on the four educational tasks (i.e., instruction, diagnosis, training, and administration) is considered important (or proves to be important in subsequent cost effectiveness analyses with the ETS data), a question about tasks should be included in the teacher questionnaires to obtain a more accurate measurement of these factors.

Of equal importance should be an attempt to quantify some of the coded responses to questions regarding the use of resources in the teacher questionnaire. This lack of quantitative data in the present questionnaire seriously limited the ability to allocate shared resources. An example of such a question with quantitative responses might be:

How often does a teacher aide assist you during your reading period?

___ Almost every period
___ One or two periods a week
___ A couple of times per month
___ Less than once a month
___ Never

This type of quantitative question would greatly simplify the allocation of shared resources. It would produce a more accurate measure of use factor (w in equation 2-15), eliminate the need for a weighting factor for reading specialists (a), and would allow a more accurate estimate of total program use of a resource (w_t).

Greater attention should be given to insure that all reading specialists in a school are included in the sample and complete questionnaires. In addition, an attempt should be made to better identify these teachers. One of the most critical sources of error in the cost analysis involves these two problems. To overcome them in future studies, the following procedures are recommended. After a school has agreed to participate in the study, a short questionnaire would be sent to the principal. Preferably this should be done before the end of the prior school year just before the start of the study year. In the questionnaire, the principal would be asked to describe, in an open-ended question, the reading program he anticipates for the following school year. Probing questions should be used to identify multigrade situations, multiclass teachers, and reading specialists (see a discussion of this idea above). In addition, there would be a name-by-name listing of all the staff, their duties, and the grades they teach (similar to Question 7 in the present Resource Questionnaire). In a separate column of this listing, the principal would identify those staff members who should be included in the study, and whether or not they are compensatory reading teachers. This last fact would allow the use of an individual school's interpretation of the definition of compensatory reading. Upon the return of this questionnaire, the open-ended question would be reviewed in an effort to identify the reading specialists. A check would then be made to see if the principal included such teachers in the sample. If he did not, or if there were any questions, the principal would be contacted by telephone and the matter resolved. All teachers identified by either process would receive teacher questionnaires at the appropriate time during the school year.

The inventory of equipment and materials required by the cost analysis would be collected as part of the principal questionnaire. The use of site visits could be significantly reduced by alternative methods of data collection. Salary schedules for staff could be requested by mail from all the schools. The costs of equipment and materials could be based on the data already collected for this study, with a sample of schools contacted by telephone for a check of accuracy and appropriateness of the existing data. Site visits would only be made to a limited number of schools, primarily to obtain background information for the analysis, and to allow pretesting of the data collection instruments.

APPENDIX A

DATA COLLECTION

APPENDIX A

DATA COLLECTION

In order to estimate the costs of school reading programs using the resource approach outlined in this report, four categories of data were required:

1. Program/school characteristics
2. Quantity of available resources
3. Unit cost of these resources
4. Allocation factors for distributing resources among school reading programs and classrooms

Two primary instruments were developed by RMC for collecting these data--a Resource Questionnaire and a Site Visit Interview Guide. These instruments were designed to complement each other and the extensive data collection effort of ETS. The Resource Questionnaire was designed to identify and quantify the school characteristics and primary education resources in the 260 ETS schools. In contrast, the purpose of the site visits was to collect more detailed data for 100 of these schools including: unit cost data for the primary resource items, descriptions and quantities of support resources, and descriptions of other reading program resources. Both instruments sought allocation and utilization factors regarding the use of various resources in reading vs non-reading programs and by grade levels 2, 4, and 6.

In addition to the two RMC data collection instruments, data at the classroom level were available from ETS questionnaires. These class level data included: preparation and experience level of teachers, and the class utilization of AV equipment, software, and other educational materials. Detailed data on the number of children in each of the classes participating in the ETS study were available from special ETS class attendance records.

A description of the design, testing, and implementation of the two RMC data collection instruments are described in the sections below.

RESOURCE QUESTIONNAIRE

Design

The Resource Questionnaire was designed to collect data regarding the quantity of resources a school has available and the proportion of these resources that are utilized for reading. The questionnaire was mailed to either the school principal or the reading coordinator, i.e., a person designated by ETS to administer and monitor the data collection efforts. Typically, the principal was the ETS reading coordinator. The instrument was designed to be completed in approximately one hour. For most of the questions, the principal could answer from his own knowledge of the school operation; however, we encouraged him to use other sources if he desired. A major simplifying aspect of the questionnaire was that we did not ask any questions about program costs. Nor did the questionnaire ask about the utilization of individual teachers since this information was available from other ETS questionnaires. Also, details about the teacher's use of equipment and materials in the classroom were not needed since the data relevant to these areas were obtained from the class and Program Characteristics Questionnaire which was completed by teachers.

The Resource Questionnaire was divided into 6 sections.

1. School characteristics
2. Staffing
3. Transportation
4. Staff development

5. Diagnosis and prescription for student reading problems
6. Facilities, equipment, books, and materials

Sections 2 and 6 focused on the available resources in the school and sections 1, 3, 4, and 5 dealt with activities and services that relate to reading. The latter sections were designed to provide data for deriving the allocation or utilization factors that relate the amount of time school resources are used for reading.

A copy of the Resource Questionnaire is included at the end of this appendix.

Pretest

The design of the questionnaire received intensive review within the Education Division of RMC Research Corporation. This review was coordinated with the staff of both ETS and USOE. To facilitate the design of the questionnaire a workshop was held at RMC to coordinate and review the overall study design and data collection plan. Additional assistance with the data collection plan was received from discussions with administrators, principals, and teachers in the Prince George's County School District in Maryland, and the Fairfax County School District in Virginia.

The initial pretest was done in Fairfax County, Virginia, at a school not included in the study sample. Some problems were experienced by the principal completing the questionnaire because he was not familiar with the overall purpose or design of the ETS study. For this reason the questionnaire was further pretested at eight Virginia and Maryland schools that were part of the ETS study. The pretest procedure was to mail the questionnaire to the school and ask the respondent to complete it prior to a visit by an RMC staff member.

In general, the respondents were able to complete the questionnaire with little difficulty. Some changes were made in the staffing section, however, to reduce the possibility of double counting particular staff members. A final pretest of the Resource Questionnaire was made during the preliminary site visit trips. This resulted in a few additional revisions and improvements to the instrument design. The final instrument design was reviewed and cleared through the U.S. Office of Management and Budget as a supplemental instrument to the ETS study effort.

Implementation

A letter was sent to all superintendents in the Phase II sample, reminding them of the ETS study and explaining RMC's involvements in the evaluation. A package was sent to the principal of all site visit schools containing the Resource Questionnaire, a return envelope, and a letter introducing RMC and describing the contents of the package. After a reasonable period of time, a follow-up letter and questionnaire were sent to the non-respondents. A second follow-up was made to the few remaining schools by telephone. In addition, telephone contacts were made to answer letters received from the schools concerning special problems they had encountered in completing the questionnaire. Telephone contacts were also made to schools who returned the questionnaire but whose response needed clarification.

To the 100 schools selected for site visits (to be described later), a letter was sent to the superintendent informing him of RMC's involvement in the ETS study and the fact that a school in his district would be visited. A letter of introduction was also sent to the principal of the selected school. Prior to the visitation, a telephone call was made to the school to arrange for a convenient date and to inform the principal about the Resource Questionnaire and the kind of questions it asks. A follow-up letter to the telephone call was then made as a reminder of the visit and enclosing a copy of the Resource Questionnaire with a request that it be completed prior to the visit. During the site visit the interviewer used the Questionnaire and the data provided in it as a starting point for the interview. Data in the questionnaire was verified at this time.

The overall response rate for the Resource Questionnaire was 97 percent for the 260 school sample. Of the responding schools 3 were not usable, lowering the useful response rate to 96 percent.

SITE VISIT INTERVIEW GUIDE

Sample Selection For Site Visits

A sample of 100 schools was selected for site visits to collect the detailed cost and resource data relevant to compensatory and developmental programs. The initial stratification was made using the three program categories defined by ETS: (1) schools with compensatory reading programs funded by Title I, (2) schools with compensatory reading programs without Title I funds, and (3) schools with no compensatory programs. These program categories were the only ones available at the time the sample was drawn. The information reported on the Phase I Questionnaire (for the prior year) was too sketchy to be used for program stratification and would not necessarily be applicable to the current school year. Altogether, there were 119, 117, and 39 schools, respectively, in the initial sample--including schools with exemplary programs. The schools without compensatory reading were over-sampled relative to schools with compensatory programs to assure an adequate sample size in this category. Drop-outs reduced the final sample to 260 schools.

A second stratification was made by classifying schools into low, medium, and high income areas. Data for average professional salaries by county from the 1970 Census were used for this purpose. Since staff salaries were known to be a significant portion of reading program costs, salary level is a useful and meaningful stratification variable for cost analysis purposes. Salary levels within urban and rural areas or by regions were found to be too variable to use these demographic/geographic designators as a means for stratification. The same salary ranges, for the low, medium, and high strata, were used for classifying schools within the three program categories. The ranges were chosen so that no cell in the sample design would have less than five schools. Table A-1 presents the stratification format and the total number of schools in each cell and the number of schools selected from each cell.

Within cells, all schools were listed in descending order of the number of students in compensatory reading based on the Phase I questionnaire data. A random start, fixed-interval skip sample was then selected. Thus, the sample drawn from each program/income level cell included a full range of program sizes, as measured by the number of students. Schools with no compensatory programs, of course, could not be ranked by student participants. Instead, the schools were listed in sequence of date of return for the Phase I questionnaire, as noted by ETS.

In the event that schools dropped out of the study, they were replaced by the school directly above or below them on the list, whichever was more convenient for scheduling purposes.

Table A-1

SAMPLE DESIGN FOR SITE VISIT SCHOOLS

	Schools with Compensatory Reading Programs Funded by Title I			Schools with Compensatory Reading Programs not Funded by Title I			Schools with No Compensatory Reading Programs			Totals
	Low Professional Salaries	Medium Professional Salaries	High Professional Salaries	Low Professional Salaries	Medium Professional Salaries	High Professional Salaries	Low Professional Salaries	Medium Professional Salaries	High Professional Salaries	
Total Schools	51	43	25	26	41	50	14	9	16	275[a]
Site Visit Sample	16	15	9	9	15	16	6	6	8	100

a. Initial sample size.

Implementation

As mentioned earlier in the section describing the implementation of the Resource Questionnaire, letters of introduction were sent to the district superintendents and school principals for all 100 site visit schools. This was followed by a telephone call to the principal to arrange a time for a visit date with a follow-up letter to confirm the appointment.

The first site visits were conducted by senior analysts who were intimately familiar with the overall study and interviewing techniques. Upon their return, they conducted a training session for all potential interviewers or field workers. The session introduced and described the ETS study including all important details that the interviewers would need to know to properly complete their field work. The Interview Guide was carefully reviewed and explained in detail, clarifying any questions that they might have about the data requirements. Even though the trainees all had prior experience in this type of field work, additional tips and techniques of interviewing that were particularly applicable in this study were reviewed. The training was completed by having each trainee accompany a senior analyst on an actual site visit. At the first site the senior analyst would conduct the interview letting the trainee observe what is involved in the interview. At a second site, the trainee would conduct the interview with the senior analyst observing to make sure the trainee had a firm grasp on the requirements of the interview.

The site visit frequently involved interviews with several people including directors of Resource or Student Centers, the District Finance Officer, the Reading Specialists, and the librarian or other person familiar with the inventories of school equipment, books, or other educational materials.

Design of Interview Guide

To assist the field staff in the data collection effort at the 100 site visit schools, an Interview Guide was prepared. The guide follows the Resource Questionnaire very closely in its design. Thus, the interviewer was able to review the completed Resource Questionnaire and use it as the basis upon which to ask for additional resource and cost data.

The Interview Guide was designed with a flexible format and contained the following sections:

1. Interview Requirements - enabled interviewer to schedule appointments with school and district staff to be contacted. Also, provided opportunity to forewarn school principal about specific data needs, e.g., salary schedules, inventories, etc.
2. Study Background - identified the program(s) and the history of the study at the school.
3. Overview of Reading Program - general description and program data.

The remaining sections of the Interview Guide followed areas relating to specific data requirements:

4. Program Design and Implementation
5. General Staffing
6. Supervision
7. Staff Development
8. Diagnostic/Prescriptive
9. Equipment - inventory and costs
10. Books - inventory and costs
11. Other Instructional Reading Materials
12. Changes in available school resources
13. Facilities, Space, etc.
14. Student related district-wide service centers
15. Transportation services
16. Resource related district-wide service centers

The site visits were designed to be completed in one or two days. The average time spent was about 1.5 days per site for the 100 site visits.

RESOURCE QUESTIONNAIRE

OMB Approval No. OMB-51-53006

Expires December 1973

_ _ _ _ _ _ (1-6)

SURVEY OF COMPENSATORY READING PROGRAMS
RESOURCE QUESTIONNAIRE

INSTRUCTIONS

This questionnaire is an addendum to one that you previously completed. It is designed to identify those resources in your school that are employed in the instruction of reading. These resources include staff, facilities, equipment, and materials. Questions will be asked concerning their quality and use in your school. It is not necessary that you answer all questions from your own knowledge. Please seek the assistance of others who are more familiar with particular areas.

In this questionnaire, special emphasis will be given to those resources employed in compensatory reading programs. As in the previous questionnaires, compensatory reading instruction is defined as any reading instruction provided to students because they are reading below grade level. In this questionnaire, any other reading instruction is considered developmental reading. In several places, you will be asked to list resources used in both developmental and compensatory reading programs. When asked to indicate resources, please include all resources utilized in a program whether they are funded by Title I (ESEA), other federal programs, your district, or any other source of funds. You will not be asked the source of funding for any resource.

Several words are defined and are listed on a fold-out page behind this cover. Please refer to these definitions as you answer the questions. It is very important to familiarize yourself with these definitions because the meaning you associate with a given term may be very different from the one we have attached to it for the purposes of this questionnaire. If you have any questions concerning this questionnaire, please call Mr. Paul Dienemann or Mr. Donald Flynn at (301) 656-2700.

PLEASE FILL IN THE FOLLOWING INFORMATION

NAME: ____________________

TITLE: ____________________

SCHOOL: ____________________

CITY/STATE: ____________________

PHONE: ____________________

GLOSSARY OF TERMS

Compensatory Reading - Any reading instruction provided to students because they are reading below grade level.

Developmental Reading - Any reading instruction that is not compensatory reading, as defined above. This includes the normal reading instruction.

Reading Support Activities - Any instruction given in subject or skills areas which tend to support the basic reading instruction. These areas include spelling, grammar, writing, and library science.

Full-Time Equivalent - The amount of employed time that a staff member is available to your school relative to a full-time employee. It is derived by dividing the total hours per week that an employee is available in your school by the number of hours a full-time employee is expected to be in your school. Several examples can best demonstrate this calculation. It will be assumed in these examples that a full time employee is required to work 40 hours per week. A part-time teacher aide who works 20 hours per week with second graders would be counted as a 20 hours/40 hours = 0.5 full-time equivalent teacher aide for the second grade. If the same aide were to split her time evenly between the second and third grade, she would be counted only as a 10 hours/40 hours = 0.25 full-time equivalent teacher aide for the second grade because she only spends 10 hours per week with the second grade. A psychologist who is employed full-time by your district but is only available to your school for 4 hours per week would be counted as 4 hours/40 hours = 0.1 full-time equivalents.

Staff Development - Formal or informal training of teaching techniques. This training can be done in school or district-wide meetings or in individual conferences. The training can be given during the summer, after school, or during school hours.

Reading Curriculum Chairman - A staff member employed by the district whose primary task is to assist the school in developing and improving reading curricula.

Special Reading Teachers - Staff members other than regular classroom teachers and teacher aides who teach reading. An example would be remedial reading teachers.

Classroom - A room designed or adapted for regularly scheduled group instruction. This includes the so-called regular classrooms and special use classrooms such as laboratories and shops but excludes such rooms as auditoriums, lunchrooms, libraries, and gymnasiums.

I. SCHOOL CHARACTERISTICS

*1. How many students are currently enrolled in your school by grade? If your school is ungraded, or if some of your classes are ungraded, use the equivalent chronological age. (IF NONE, WRITE "NONE.")

Grade	Number of Students	
K		9-11
1		12-14
2		15-17
3		18-20
4		21-23
5		24-26
6		27-29
7		30-32
8		33-35

*2. How many classrooms do you have in your school? Include any room designed or adapted for regularly scheduled group instruction. Do not include mobile or temporary classrooms. ________ 36-37

*2a. How many mobile or temporary classrooms do you have? (IF NONE, WRITE "NONE.") ________ 38-39

*3. What is the total floor space of your school in square feet? Use the outside dimension of your school times the number of floors. For example, a two-story school that is 150 feet long and 50 feet wide would have a total floor space of 150 x 50 x 2 = 15,000 square feet. ____________ 40-43

*4. In what year was your school originally built? ____________ 44-46

*5. In what year was the last major modification made to your school? Examples of a major modification would be the construction of additional classrooms, or the modernization of the school building. (IF NO MODIFICATIONS HAVE BEEN MADE, WRITE "NONE.") ____________ 47-49

*6. Compared with three years ago, how has your student enrollment changed?

Increased .... ☐ 50-1
About the Same .... ☐ -2
Decreased .... ☐ -3

II. STAFFING

In this section, we want to identify all your resources in terms of educational staff. We are interested in all the educational personnel in your school as well as district personnel that visit your school regularly or operate services that are available to your school. We are especially interested in the individuals that are involved in the instruction of reading; however, we are also very interested in the individuals whose services directly or indirectly affect a child's reading ability.

For the conceptual purposes of this questionnaire, we need to define several groups of staff categories in order that we may more efficiently and clearly relate questions to them. We are defining four groups of staff that are described below and repeated at the beginning of each series of questions relating to them:

GROUP A - includes all staff members that are employed exclusively in your school, such as teachers, teacher aides, reading specialists, and resource teachers. Also included in this group are any staff who are employed in your district and visit your school on a regular basis, such as psychologists, speech therapists, and social workers.

GROUP B - includes all staff who are employed in your district and work with your students but who work in a district-wide center to which students from many schools travel. Examples of such staff would be the employees of a Reading Center or Diagnostic Center.

Group C - includes all staff who are employed in your district and provide a resource to your staff but who work in a district-wide center to which staff members from many schools travel. Examples of such staff would be the employees of an Instructional Materials Center or Curriculum Development Center.

GROUP D - includes all staff members who are responsible for the supervision or administration of reading-related programs across several schools of which yours is one. Examples of such staff would be Federal Program Directors and reading curriculum chairmen.

In order to eliminate double counting of staff, it is important that a staff member be listed in only one group. It is less important in which group he is listed.

GROUP A - includes all staff members who are employed exclusively in your school, such as teachers, teacher aides, reading specialists, and resource teachers. Also included in this group are staff who are employed in your district and visit your school on a regular basis, such as psychologists, speech therapists, and social workers.

	7a. Please list in Column I all staff types in Group I that are utilized in your school. Do not list individual names but group staff under categories such as teachers, paid teacher aides, etc.	7b. Indicate in Column II the primary duties of each staff type and their relation to reading in your school. Give special attention to whether their duties involve administration, instruction or the reinforcement of instruction, advising or training teachers in new techniques, or diagnosing and prescribing student reading problems.	7c. Indicate in Column III the number of full-time equivalents available in your school for each staff type.	7d. Indicate in Column IV all the grades in which each staff type is usually involved.	7e. Indicate in Columns V, VI, VII, and VIII the rough split of a staff type's time spent in activities relating to developmental reading, compensatory reading, reading support activities, and other subject activities. The sum of each of these four columns should be 100 percent for each staff type.			
	I	II	III	IV	V	VI	VII	VIII
	Staff Type	Duties	Number Available (Full Time Equivalents)	Grades	Developmental Reading (% Time)	Compensatory Reading (% Time)	Reading Support Activities (% Time)	Other Subject Activities (% Time)
C2								
C3								
C4								
C5								
C6								
C7								
C8								
C9								
C10								
C11								
C12								
C13								
C14								
C15								
C16								
C17								
C18								
C19								
C20								
C21								
C22								
C2-22	9-10		11-14	15-23	24-26	27-29	30-32	33-35

C2-22

8. If in Q. 7 you listed either paid or volunteer teacher aides, do they assist in the developmental and/or compensatory reading programs in your school in the second, fourth, and sixth grades?

Yes .... ☐
No (GO TO Q. 11) .... ☐

8a. (IF YES) Please indicate in Column A in the table below how many paid teacher aides (expressed as full-time equivalents) are used in your school at each grade level listed? (IF NONE, WRITE "NONE.")

*8b. Please indicate in Columns B, C, D, and E the approximate percent of time that paid teacher aides at each grade level spend with developmental reading, compensatory reading, read support activities, and other subject activities. The sum of these four columns should be 100 percent for each row.

Grade	A	B	C	D	E
	Teacher-Aides (Full-Time Equivalents)	Developmental Reading (% Time)	Compensatory Reading (% Time)	Reading Support Activities (% Time)	Other Subject Activities (% Time)
2	9-12	13-15	16-18	19-21	22-24
4	25-28	29-31	32-34	35-37	38-40
6	41-44	45-47	48-50	51-53	54-56

9. What is the total number of teacher aides in your school who assist in the developmental and/or compensatory reading programs in the second, fourth, and sixth grades? Please indicate the number of paid and volunteer teacher aides. How many have college degrees? Place these numbers in Columns A and B. (IF NONE, WRITE "NONE.")

*9a. How many of each total work full-time and how many work part-time? Place these numbers in Columns C and D. (IF NONE, WRITE "NONE.")

	A	B	C	D
	Total Number of Teacher Aides	Number With College Degrees	Full-Time Teacher Aides	Part-Time Teacher Aides
Paid	57-58	59-60	61-62	63-64
Volunteer	65-66	67-68	69-70	71-72

*10. Please rank the tasks of paid teacher aides in your school who assist in developmental or compensatory reading programs. Place "1" for the task that consumes the greatest amount of time, and "2" for the task that consumes the second greatest amount of time. (ENTER ONLY ONE "1" AND ONLY ONE "2" ON EACH HORIZONTAL ROW. IF NO PAID TEACHER AIDES ARE USED, CHECK "NO PAID TEACHER AIDES USED.")

	No Paid Teacher Aides Used	Instruction of Reading or its Reinforcement	Receiving Training	Evaluating Student Reading Problems	General Classroom Assistance (marking papers, attendance, etc.)	Other (PLEASE SPECIFY IN SPACE PROVIDED IN RIGHT COLUMN BELOW.)		
	-01	-02	-03	-04	-05			
Teacher Aides in Developmental Reading: Grade 2							__________	9-11/ 12-14
Grade 4							__________	15-17/ 18-20
Grade 6							__________	21-23/ 24-26
Teacher Aides in Compensatory Reading: Grade 2							__________	27-29/ 30-32
Grade 4							__________	33-35/ 36-38
Grade 6							__________	39-41/ 41-44

GROUP B - Includes all staff who are employed in your district and work with your students but who work in a district-wide center to which students from many schools travel. Examples of such staff would be the employees of a Reading Center or Diagnostic Center.

---

11. Does your district provide specialized instruction in reading or diagnostic services to students in a district-wide center(s) to which the students must travel?

Yes .... ☐
No (GO TO Q. 12) .... ☐

*11a. (IF YES) Please give the name of the center(s) and briefly describe the services it provides. An example of such a center is a Reading Center which provides specialized reading instruction for reading problems.

	Name of Center	Service Provided
Center No. 1 (C25)	______	______ ______ ______
Center No. 2 (C26)	______	______ ______ ______
Center No. 3 (C27)	______	______ ______ ______

9-14

C25-27

Questions 11b - 11e below refer to the centers listed in 11a above.

		C25 Center No. 1	C26 2	C27 3	
*11b. Counting your school, how many schools in your district are eligible to send students to receive services from this center?		____	____	____	15-16
*11c. About what number of the students within your school are referred for services per year?		____	____	____	17-20
*11d. About what number of the students within your school are referred for services because of reading-related problems per year?		____	____	____	21-24
*11e. Please indicate all staff in GROUP B who work at the district center. (EXPRESS AS FULL-TIME EQUIVALENTS.)	Staff Type				
	Administrative	____	____	____	25-27
	Clerical	____	____	____	28-30
	Teachers	____	____	____	31-33
	Other Professionals	____	____	____	34-36
	Teacher Aides	____	____	____	37-39
	Other Non-Professionals	____	____	____	40-42
	Other (SPECIFY): ________	____	____	____	43-45

C25-27

GROUP C - Includes all staff who are employed in your district and provide a resource to your staff but who work in a district-wide center to which staff members from many schools travel. Examples of such staff would be the employees of an Instructional Materials Center or Curriculum Development Center.

12.	Does your district provide specialized resources or instructional materials to your staff in a district-wide center(s)?	Yes .... ☐ No (GO TO Q. 13) .... ☐

*12a. (IF YES) Please give the name of the center(s) and briefly describe the resources it provides. An example of such a center would be an Instructional Materials Center, which provide teachers with materials, such as books and filmstrips, for special subjects, or a Curriculum Development Center.

	Name of Center	Resources Provided
Center No. 1 (C28)		
Center No. 2 (C29)		
Center No. 3 (C30)		

9-14

C28-30

Questions 12b - 12d below refer to the centers listed in 12a above.

		C28	C29	C30	
		Center No.			
		1	2	3	
*12b. Counting your school, how many schools in your district are eligible to receive services from this center?		______	______	______	15-17
*12c. Of the resources that your school received from this center, what was the rough percentage in each subject area? The sum of the percentages for each column should equal 100.	Developmental Reading	______	______	______	18-20
	Compensatory Reading	______	______	______	21-23
	Other Subject Areas	______	______	______	24-26
		100%	100%	100%	
*12d. Please indicate all staff in GROUP C who work at the district center. (EXPRESS AS FULL-TIME EQUIVALENTS.)	Staff Type				
	Administrative	______	______	______	27-29
	Clerical	______	______	______	30-31
	Teachers	______	______	______	32-34
	Other Professionals	______	______	______	35-37
	Teacher Aides	______	______	______	38-40
	Other Non-Professionals	______	______	______	41-43
	Other (SPECIFY): ______________	______	______	______	44-46

GROUP D - Includes all staff members who are responsible for the supervision or administration of reading related programs across several schools of which yours is one. Examples of such staff would be a Federal Program Director and a reading curriculum chairman.

13. Do you have any district staff responsible for supervision or administration of reading related programs?

Yes .... ☐
No (GO TO Q. 14) .... ☐

*13a. Please list below the titles of these staff, the number of schools they work with, and a brief description of their duties or responsibilities. Indicate whether they are employed full-time in these duties. An example would be a Federal Title I Programs Director.

	Title	No. of Schools	Duties
1.		9-10	11-15
2.		16-17	18-22
3.		23-24	25-29
4.		30-31	32-36
5.		37-38	39-43
6.		44-45	46-50
7.		51-52	53-57
8.		58-59	60-64

This completes the questions that identify the staff that are utilized in your school. We are now interested in determining whether there have been any changes, or whether there will be any changes in the staff during this academic year.

---

*14.	Have there been any changes, or do you anticipate any changes in this academic year, in the number of staff available to your school? Consider staff in your school, the availability of district centers, and district supervision or administration staff. For example, has there been an increase or decrease in the total number of teachers utilized in your school, or have you just started sending your students to a new district center?	Yes .... ☐ No (GO TO Q. 15) .... ☐	9-1 -2

*14a. (IF YES) Please describe what changes have taken place, or the changes that you anticipate.

10-15

III. TRANSPORTATION

In this question we are trying to identify any transportation that is made necessary because of centralized services in compensatory reading.

*15. Are any of the students in your school transported for the purpose of receiving compensatory reading education?

Yes .... ☐ 16-1
No (GO TO Q. 16) .... ☐ -2

*15a. (IF YES) How many students receive this service? (ENTER THE DAILY AVERAGE OF STUDENT ROUND-TRIPS BY GRADE. IF NONE, WRITE "NONE.")

Grade	Student Round-Trips	
2		17-19
4		20-22
6		23-25

*15b. On the average, how far are these students transported for each round trip? (CHECK ONLY ONE.)

1 - 3 miles .... ☐ 26-1
4 - 6 miles .... ☐ -2
7 - 9 miles .... ☐ -3
10 or more miles .... ☐ -4

*15c. How is this transportation provided? (CHOOSE THE ONE METHOD TRANSPORTING THE MOST STUDENTS.)

School-owned bus .... ☐ 27-1
Other school-owned vehicle .... ☐ -2
Contracted transportation service . ☐ -3
Personal vehicles .... ☐ -4
Other (SPECIFY)
________________________ .... ☐

IV. STAFF DEVELOPMENT

In this section we are trying to obtain more detailed information about staff development activities that are conducted for your staff to improve the effectiveness of your reading program, either developmental or compensatory. We will ask questions about how the activities are conducted, who participates, and how much time is spent in them. The personnel that you list in this section are probably listed in the staffing section. The purpose of this section is to identify the staff development activities affecting them.

For the conceptual purposes of this questionnaire, we need to define several categories of staff development activities in order that we may more clearly relate questions to them. We are defining three categories of staff development activities that are described below and repeated at the beginning of each series of questions relating to them.

CATEGORY A - Any staff development activities involving formal meetings which are conducted for your staff and simultaneously are presented to staff from several schools. These meetings require a definite leader who must prepare for the activity. Examples would be district wide seminars and summer workshops.

CATEGORY B - Any staff development activities involving formal meetings, similar to CATEGORY A activities, which are given solely to your staff. No staff from other schools are present. Examples would be seminars or demonstrations conducted by school or district staff, consultants, or publisher representatives.

CATEGORY C - Any staff development activities that are conducted solely for your staff that are informal in that they require little or no preparation. The prime example of this type of activity would be group discussions where teachers discuss problems or exchange ideas. The principal or district staff may participate in these discussions.

CATEGORY A - Any staff development activities involving formal meetings which are conducted for your staff and simultaneously are presented to staff from several schools. These meetings require a definite leader who must prepare for the activity. Examples would be district wide seminars and summer workshops.

---

16. Does your district have staff development activities which fall into Category A?

Yes .... ☐
No (GO TO Q. 17) .... ☐

*16a. (IF YES) Please name the activity and briefly describe it.

Name of Activity	Description
(1) ______________ C33	______________ ______________ ______________
(2) ______________ C34	______________ ______________ ______________
(3) ______________ C35	______________ ______________ ______________

9-14

C33-35

Questions 16b-16h below refer to the activities listed in 16a on the previous page.

		C33	C34	C35	
		Activity No.			
		1	2	3	
*16b. How often are meetings held for this activity? (EXPRESS IN CONVENIENT TERMS SUCH AS "1 PER WEEK" OR "ONCE EVERY 2 MONTHS.")					15-18
*16c. On the average, how long do these meetings last? (EXPRESS IN HOURS.)					19-21
*16d. Are staff released from their classes for these meetings?		Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	22-1 -2
*16e. Counting your school, what is the average number of schools represented at these meetings?					23-24
*16f. On the average, how many of your staff each meeting. (LIST BY TYPE.)	Staff Type				
	Classroom Teachers	_____	_____	_____	25-26
	Special Reading Teachers	_____	_____	_____	27-28
	Teacher Aides	_____	_____	_____	29-30
	Others (SPECIFY) ________________	_____	_____	_____	31-32
*16g. Please indicate the average number of individuals who prepare or conduct these meetings. (LIST BY TYPE.)	Staff Type				
	District Staff	_____	_____	_____	33-34
	Publisher Representatives	_____	_____	_____	35-36
	Hired Consultants	_____	_____	_____	37-38
	Others (SPECIFY) ________________	_____	_____	_____	39-40
*16h. Is this activity designed specifically for compensatory reading education?		Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	41-1 -2

CATEGORY B - Any staff development activities involving formal meetings, similar to Category A activities, which are given solely to your staff. No staff from other schools are present. Examples would be seminars or demonstrations conducted by school or district staff, consultants, or publisher representatives.

17. Does your school have staff development activities which fall into Category B?

Yes .... ☐
No (GO TO Q. 18) .... ☐

*17a. (IF YES) Please name the activity and briefly describe it.

Name of Activity	Description
(4) ____________ C36	____________
(5) ____________ C37	____________
(6) ____________ C38	____________

9-14

C36-38

Questions 17b-17g below refer to the activities listed in 17a on the previous page.

			C36	C37	C38	
			Activity No.			
			4	5	6	
***17b.**	How often are meetings held for this activity? (EXPRESS IN CONVENIENT TERMS SUCH AS "1 PER WEEK" OR "ONCE EVERY 2 MONTHS.")					15-18
***17c.**	On the average, how long do these meetings last? (EXPRESS IN HOURS.)					19-21
***17d.**	Are staff released from their classes for these meetings?		Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	22-1 -2
***17e.**	On the average, how many of your staff attend each meeting? (LIST BY TYPE.)	Staff Type				
		Classroom Teachers	______	______	______	23-24
		Special Reading Teachers	______	______	______	25-26
		Teacher Aides	______	______	______	27-28
		Others (SPECIFY) ____________________	______	______	______	29-30
***17f.**	Please indicate the average number of individuals who prepare or conduct **each meeting.** (LIST BY TYPE.)	Staff Type				
		District Staff	______	______	______	31-32
		Publisher Representatives	______	______	______	33-34
		Hired Consultants	______	______	______	35-36
		Others (SPECIFY) ____________________	______	______	______	37-38
***17g.**	Is this activity designed specifically for compensatory reading education?		Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	39-1 -2

C36-38

CATEGORY C - Any staff development activities that are conducted solely for your staff that are informal in that they require little or no preparation. The prime example of this type of activity would be group discussions where teachers discuss problems or exchange ideas. The principal or district may participate in these discussions.

---

18. Does your school have staff development activities which fall into Category C?	Yes .... ☐ No (GO TO Q. 19) .... ☐

*18a. (IF YES) Please name the activity and briefly describe it.

Name of Activity	Description
(7) ____________ C39	
(8) ____________ C40	
(9) ____________ C41	

9-14

152

C39-41

Questions 18b-18f below refer to the activities listed in 18a on the previous page.

		C39	C40	C41	
		Activity No.			
		7	8	9	
***18b.** How often are meetings held for this activity? (EXPRESS IN CONVENIENT TERMS SUCH AS "1 PER WEEK" OR "ONCE EVERY 2 MONTHS.")					15-18
***18c.** On the average, how long do these meetings last? (EXPRESS IN HOURS.)					19-21
***18d.** Are staff released from their classes for these meetings?		Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	22-1 -2
***18e.** On the average, how many of your staff attend each meeting? (LIST BY TYPE.)	Staff Type				
	Classroom Teachers	____	____	____	23-24
	Special Reading Teachers	____	____	____	25-26
	Teacher Aides	____	____	____	27-28
	Others (SPECIFY) __________	____	____	____	29-30
***18f.** Is this activity designed specifically for compensatory reading education?		Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	31-1 -2

V. DIAGNOSIS AND PRESCRIPTION FOR STUDENT READING PROBLEMS

*19.	Does your school give a reading achievement test, or a reading diagnostic test, to most students at some time during the school year?	Yes .... ☐	9-1
		No (GO TO Q. 20) .... ☐	-2

*19a. (IF YES) What is the name of the diagnostic reading test(s) that you administer by grade?

Grade 2 ____________________

____________________ 10-12

Grade 4 ____________________

____________________ 13-15

Grade 6 ____________________

____________________ 16-18

*20. Please describe the process for identifying the reading-related problems of students in your school. How deeply involved is the teacher in identifying these problems? Are intensive diagnostic tools used for some children? If so, what are they, and who administers them? Who prescribes educational solutions to these problems?

____

____

____

____

____

____

____

____

____

19-24

VI. FACILITIES, EQUIPMENT, BOOKS, AND MATERIAL

*21.	Are any rooms, excluding mobile or temporary classrooms, in your school used exclusively for compensatory reading? Do not include facilities associated with district-wide Reading Centers, Diagnostic/ Prescriptive Centers, or other similar district-wide services that happen to be in your school.	Yes ☐ No (GO TO Q. 22) ☐	25-1 -2
*21a.	(IF YES) How many rooms are used exclusively for compensatory reading?	______	26-27
*22.	Do you use any mobile or temporary classrooms in your school exclusively for compensatory reading?	Yes ☐ No (GO TO Q. 23) ☐	28-1 -2
*22a.	(IF YES) How many mobile or temporary classrooms are used exclusively for compensatory reading?	______	29-30

In this question we are interested in determining the inventory of major equipment items in your school and their utilization.

---

23. For each type of equipment listed, indicate the number that are available in your school. Please include all equipment items regardless of their use. (IF NONE, WRITE "NONE.")

*23a. How often is each type of equipment used in reading instruction, either compensatory or developmental, as opposed to use for other subject areas in your school? (CHECK THE MOST APPROPRIATE DESCRIPTION OF ITS USE.)

		Q. 23.	Q. 23a.				
		Number that are available	Almost Always Used in Reading	Generally Used in Reading	Used About Half the Time in Subject Areas Other Than Reading	Generally Used in Subject Areas Other Than Reading	Almost Always Used in Subject Areas Other Than Reading
C43	Tape Recorder	____	☐	☐	☐	☐	☐
	Record Player	____	☐	☐	☐	☐	☐
	Movie Projector	____	☐	☐	☐	☐	☐
	Filmstrip Projector	____	☐	☐	☐	☐	☐
	Slide Projector	____	☐	☐	☐	☐	☐
	Opaque Projector	____	☐	☐	☐	☐	☐
	Overhead Projector	____	☐	☐	☐	☐	☐
	Television	____	☐	☐	☐	☐	☐
	Language Master	____	☐	☐	☐	☐	☐
	Tachistoscope	____	☐	☐	☐	☐	☐
	Controlled Reader	____	☐	☐	☐	☐	☐
	Shadowscope Reading Pacer	____	☐	☐	☐	☐	☐
C44	Other Major Equipment (SPECIFY):						
	____________	____	☐	☐	☐	☐	☐
	____________	____	☐	☐	☐	☐	☐
	____________	____	☐	☐	☐	☐	☐

2CC 3CC 1CC

C43-44

*24. What is the approximate inventory of basal readers used in your school for reading instruction, either developmental or compensatory? How many are used exclusively for compensatory reading? (CHECK ONE IN EACH COLUMN.)

	Total Basal Readers Used for All Reading	Basal Readers Used Exclusively for Compensatory Reading
None	☐ -01	☐ -01
1 - 9	☐ -02	☐ -02
10 - 24	☐ -03	☐ -03
25 - 49	☐ -04	☐ -04
50 - 99	☐ -05	☐ -05
100 - 199	☐ -06	☐ -06
200 - 399	☐ -07	☐ -07
400 - 799	☐ -08	☐ -08
800 - 1,599	☐ -09	☐ -09
1,600 - 3,199	☐ -10	☐ -10
3,200 or over	☐ -11	☐ -11
	9-10	11-12

*25. Approximately how many books are in your school library?

No Library	☐	13-1
1 - 499	☐	-2
500 - 999	☐	-3
1,000 - 1,999	☐	-4
2,000 - 3,999	☐	-5
4,000 - 5,999	☐	-6
6,000 - 7,999	☐	-7
8,000 - 9,999	☐	-8
10,000 or over	☐	-9

---

*26. Does your school have any commercially available reading sets (e.g., Alpha One, Sullivan, Distar, etc.)?

Yes .... ☐ 14-1
No (END OF QUESTIONNAIRE). ☐ -2

26a. (IF YES) Please indicate the name, publisher, and number of students for which the set was purchased.

	Set Name	Publisher	Number of Students
1.			
2.			
3.			
4.			
5.			
	2CC		3CC

This completes the Questionnaire. Thank you for your cooperation.

APPENDIX B

PROCEDURE FOR IDENTIFYING CLASS INSTRUCTOR TYPES

APPENDIX B

PROCEDURE FOR IDENTIFYING CLASS INSTRUCTOR TYPES

In this study, a reading class is defined as any group of students for which a separate attendance record was kept and for which a teacher completed a Program Characteristics Questionnaire. The teacher of that class is called a reading class instructor. She may be either a conventional classroom teacher (i.e., a teacher who teaches a variety of subject areas to 20–30 students) or a reading specialist (i.e., a teacher who spends most of her day teaching reading). To avoid confusion caused by the use of such a broad definition of reading class instructors, four additional types of staff have been identified. These are defined below.

Type 1: Regular Classroom Teacher-- This class instructor teaches a variety of subject areas during the day. Generally, reading instruction represents 25% or less of her time. She usually teaches reading to 20-30 students, although it is not necessary that she teach the same students all day.

Type 2: Regular Classroom Teacher in a Cross-Grade Teaching Situation-- This instructor type is identical to a Type 1 classroom teacher except that she teaches students from more than one grade. Because of this, she keeps more than one attendance record.

Type 3: Departmentalized Reading Teacher-- This instructor type spends the majority of her day teaching reading to students. Her instruction is the basic reading instruction provided to these students, although some students may be provided additional instruction by other teachers. She generally teaches at least 100 students a day across several grades, and keeps more than one attendance record.

Type 4: Reading Specialist--This instructor type spends the majority of her day teaching reading to students. Her instruction is generally in addition to basic reading instruction provided by another teacher. She generally teaches less than 100 students per day across several grades and keeps more than one attendance record.

These four designators are used to identify the specific type of class instructor in each reading class and are needed for the reading class allocation submodel. As explained in Chapter 3, Types 1 and 2 class instructors, because they only teach one class, are considered fully dedicated to their class. Types 3 and 4 class instructors, because they can teach more than one class, have their time divided between their classes in proportion to the number of students in each class. Type 2 instructors are differentiated from Type 1 instructors because of the necessity to estimate the total number of students taught by this type of instructor. Because of the cross-grade teaching situation of this type of instructor, her true class size is not reported. For the purposes of the cost analysis, her class size is estimated as equal to the total school enrollment divided by the number of classroom teachers. Type 3 instructors are differentiated from Type 4 instructors because of their significantly different tasks in the reading program. Type 4 instructors provide supplementary reading instruction in addition to the basic reading instruction, while Type 3 instructors provide only basic reading instruction, but in a departmentalized setting.

The determination of a class instructor's type is a function of three items:

- the number of attendance record kept by the teacher,
- the total number of students taught, and
- the number of students in common with other teachers.

The importance of the first two items can be observed by examining the definition of the various types of class instructors. The third item, common students, is critical in determining which class instructors are reading specialists.

By definition, a reading specialist provides instruction which is in addition to the basic reading instruction. Thus, students on her attendance record should also appear on other teacher's rolls. In fact, all her students should appear on other rolls. While the basic reading teachers' rolls would show the common students, the majority of their students would not be found on other rolls. In addition, it is usually true that the basic reading teacher would have common students with only the reading specialist, while the reading specialist would have common students with most of the basic reading teachers. After determining the common students, these facts can be used to identify the reading specialists.

To determine the number of common students in each class, a student-class comparison matrix is developed for each school from the individual class rolls. Two examples are shown below.

```
STUDENT CLASS COMPARISON MATRIX FOR SCHOOL                       189

NO.
STU CLASS  21  23  41  43  61  63
           *********************
 24  21  *   24
 26  23  *    0  26
 24  41  *    0   0  24
 25  43  *    0   0   0  25
 26  61  *    0   0   0   0  26
 25  63  *    0   0   0   0   0  25
```

```
STUDENT CLASS COMPARISON MATRIX FOR SCHOOL                       192

NO.
STU CLASS  21  22  23  24  25  30  41  42
           ***************************
 28  21  *   27
 29  22  *    0  29
 29  23  *    0   0  26
 27  24  *    0   0   0  25
 28  25  *    0   0   0   0  27
  7  30  *    1   0   3   2   1   0
 30  41  *    0   0   0   0   0   0  30
 28  42  *    0   0   0   0   0   0   0  28
```

The first vertical column is the total number of students in a class. The second column is the unique class code associated with each class. These same class codes are reproduced in the top horizontal row. The numbers found at the intersection of these rows and columns represent the quantity of students in both classes. For example, in School 192, there are two students who are in both Classes 24 and 30. Where the row and column intersection have the same class codes (found along the diagonal of the matrix), the number represents the quantity of students found only in that particular class. For example, there are 25 students that are found only in Class 24. Thus, in Class 24, there are 25 students who are only in this class, and two students who are also in Class 30. This total, 27, can also be found in the first column next to Class Code 24.

Using these comparison matrices, it is a simple task to determine the type class instructor. This procedure is demonstrated below.

School 189

1. From the names of the instructors on each roll, it is determined that no instructor taught more than one class.
2. No instructor teaches students from another class.
3. All instructors teach between 20 and 30 students.
4. Thus, all instructors in this school are Type 1 instructors. This does not necessarily mean that there are no reading specialists in the school. It just means that if there were a reading specialist, she did not complete a questionnaire.

School 192

1. From the names of the instructors on each roll, it is determined that no instructor taught more than one class.
2. Class 30 has no students which are only in this class. All students in this class are also in either Class 21, 23, 24, or 25.
3. Except for the students in common with Class 30, no other instructor teaches students from another class.
4. Except for Class 30, all instructors teach between 20 and 30 students.
5. Thus, the instructor of Class 30 is a Type 4 instructor. All other instructors are Type 1.

APPENDIX C

PROCEDURE FOR DETERMINING THE READING PROGRAM FACTORS OF TYPE 1 AND TYPE 2 CLASS INSTRUCTORS

APPENDIX C

PROCEDURE FOR DETERMINING THE READING PROGRAM FACTORS OF TYPE 1 AND TYPE 2 CLASS INSTRUCTORS

By definition, the reading program factors, p, of Type 1 and Type 2 class instructors are proportional to the amount of time they teach their students reading. Thus, if an instructor teaches reading for one hour a day, and her instruction day is six hours long, she spends 1/6 or 16.7 percent of her day in reading. The value thus calculated is the program factor, or p = .167.

Each class instructor completed a Program Characteristics Questionnaire in which she completed the following question:

What is the average amount of formal instructional time per student in reading?

a. Minutes per instructional period:

1 ☐ 1-15
2 ☐ 16-30
3 ☐ 31-40
4 ☐ 41-50
5 ☐ 51-60
6 ☐ 61-75
7 ☐ 76-90
8 ☐ 91 or more

b. Number of instruction periods per week:

1 ☐ One
2 ☐ Two or three
3 ☐ Four or five
4 ☐ More than five

Note: This is Question 23 in the blue or Compensatory Program Characteristics Questionnaire, and Question 19 in the yellow or Non-Compensatory Program Characteristics Questionnaire.

From this question, it is possible to determine the length of an instructional period, and the frequency of instructional periods. The product of these two responses is equal to the total time spent teaching reading each week. However, after examining a large number of questionnaires, it appears as if some instructors have misinterpreted this question. This misinterpretation is felt to occur when an instructor indicated that the instructional period was only 1-15 minutes long, when the balance of the teachers in that grade and school indicated that the instructional period was significantly longer, generally in excess of 30 minutes. It is felt that this instructor interpreted the question as asking for the average time divided by the number of students in the class rather than the total reading time. Because of the frequency of this apparent misinterpretation, this procedure was developed to check this response.

In a later part of the Program Characteristics Questionnaire, each instructor was also asked the following question:

For a typical pupil in your reading class, about how much in-school time is devoted to each of the following reading or reading-related activities?

	None	Less than 1 hour per week	Between 1 and 4 hrs/ wk	More than 1 hour a day (5+ hrs/wk)
Basic reading instructional program	☐	☐	☐	☐

Note: This is question 43 in the blue questionnaire, and question 40 in the yellow questionnaire.

This question is not as accurate as the first question in defining the total amount of in-school reading time, particularly in the 1 to 4 hours per week response. However, it can be used to check whether or not the instructor misinterpreted the first question.

Table C-1 below presents the possible responses from the above questions. For each combination, an estimate is made of the total reading time. This calculation is generally equal to the product of the frequency of instruction and the length of the instructional period using the midpoint of their ranges. When this product is significantly different from the response of the second question, one of two techniques are used to resolve the conflict. If the length of instruction is 1-15 minutes, it is assumed that the instructor misinterpreted the first question. A higher estimate is then made which logically lies within the limitations imposed by the second question. If significant differences occur with other response combinations, the limitation imposed by the second question is used. This second technique for resolving conflicts is actually used very little in the reading program cost model.

Table C-1

READING PROGRAM FACTORS FOR TYPE 1 AND TYPE 2 CLASS INSTRUCTORS

Question 1		Question 2		
Length of Instruction (minutes)	Frequency of Instructional Period (per week)	Total In-School Instruction (hour per week)	Estimated Minutes of Reading Time Per Week	Reading Program Factor
1-15	1	less than 1	8	.004
1-15	1	1-4	90	.050
1-15	1	5 or more	300	.157
1-15	2-3	less than 1	24	.013
1-15	2-3	1-4	120	.067
1-15	2-3	5 or more	300	.167
1-15	4-5	less than 1	40	.022
1-15	4-5	1-4	150	.100
1-15	4-5	5 or more	350	.194
1-15	5 or more	less than 1	60	.033
1-15	5 or more	1-4	240	.133
1-15	5 or more	5 or more	350	.194
16-30	1	less than 1	24	.013
16-30	1	1-4	69	.038
16-30	1	5 or more	300	.167
16-30	2-3	less than 1	60	.033
16-30	2-3	1-4	72	.040
16-30	2-3	5 or more	300	.167
16-30	4-5	less than 1	60	.033
16-30	4-5	1-4	120	.067
16-30	4-5	5 or more	300	.167
16-30	5 or more	less than 1	60	.033
16-30	5 or more	1-4	168	.098
16-30	5 or more	5 or more	300	.167

Table C-1 (continued)

Question 1		Question 2		
Length of Instruction (minutes)	Frequency of Instructional Period (per week)	Total In-School Instruction (hour per week)	Estimated Minutes of Reading Time Per Week	Reading Program Factor
31-40	1	less than 1	36	.020
31-40	1	1-4	69	.038
31-40	1	5 or more	300	.167
31-40	2-3	less than 1	60	.033
31-40	2-3	1-4	108	.060
31-40	2-3	5 or more	300	.167
31-40	4-5	less than 1	60	.033
31-40	4-5	1-4	180	.100
31-40	4-5	5 or more	300	.167
31-40	5 or more	less than 1	60	.033
31-40	5 or more	1-4	240	.133
31-40	5 or more	5 or more	300	.167
41-50	1	less than 1	46	.026
41-50	1	1-4	69	.038
41-50	1	5 or more	300	.167
41-50	2-3	less than 1	60	.033
41-50	2-3	1-4	138	.077
41-50	2-3	5 or more	300	.167
41-50	4-5	less than 1	60	.033
41-50	4-5	1-4	230	.128
41-50	4-5	5 or more	300	.167
41-50	5 or more	less than 1	60	.033
41-50	5 or more	1-4	240	.133
41-50	5 or more	5 or more	322	.179
51-60	1	less than 1	56	.031
51-60	1	1-4	69	.038
51-60	1	5 or more	300	1.67
51-60	2-3	less than 1	60	.033
51-60	2-3	1-4	168	.098
51-60	2-3	5 or more	300	.167
51-60	4-5	less than 1	60	.033
51-60	4-5	1-4	240	.133
51-60	4-5	5 or more	300	.167
51-60	5 or more	less than 1	60	.033
51-60	5 or more	1-4	240	.133
51-60	5 or more	5 or more	392	.218

Table C-1 (continued)

Question 1		Question 2		
Length of Instruction (minutes)	Frequency of Instructional Period (per week)	Total In-School Instruction (hour per week)	Estimated Minutes of Reading Time Per Week	Reading Program Factor
61-75	1	less than 1	60	.033
61-75	1	1-4	69	.038
61-75	1	5 or more	300	.167
61-75	2-3	less than 1	60	.033
61-75	2-3	1-4	204	.113
61-75	2-3	5 or more	300	.167
61-75	4-5	less than 1	60	.033
61-75	4-5	1-4	240	.133
61-75	4-5	5 or more	345	.192
61-75	5 or more	less than 1	60	.033
61-75	5 or more	1-4	240	.133
61-75	5 or more	5 or more	483	.269
76-90	1	less than 1	60	.033
76-90	1	1-4	84	.046
76-90	1	5 or more	300	.167
76-90	2-3	less than 1	60	.033
76-90	2-3	1-4	240	.133
76-90	2-3	5 or more	300	.167
76-90	4-5	less than 1	60	.033
76-90	4-5	1-4	240	.133
76-90	4-5	5 or more	420	.233
76-90	5 or more	less than 1	60	.033
76-90	5 or more	1-4	240	.133
76-90	5 or more	5 or more	588	.326
90	1	less than 1	60	.033
90	1	1-4	120	.067
90	1	5 or more	300	.167
90	2-3	less than 1	60	.033
90	2-3	1-4	240	.133
90	2-3	5 or more	300	.167
90	4-5	less than 1	60	.033
90	4-5	1-4	240	.133
90	4-5	5 or more	500	.278
90	5 or more	less than 1	60	.033
90	5 or more	1-4	240	.133
90	5 or more	5 or more	700	.390

APPENDIX D

EXAMPLE MODEL CALCULATION

APPENDIX D

EXAMPLE MODEL CALCULATION

Because of the large number of variables required to operate the model, and because of their interaction, the program cost model developed in Chapter 2 may appear very confusing to the reader. In an effort to eliminate some of this confusion, and to better clarify the actual operation of the model, this appendix presents an example of the required model calculations. The example is a complete representation of the operation of the model from data collection through model output. To demonstrate the interactions, it makes use of data for various grades and resource categories. For simplicity, the example is postulated for a hypothetical school where resources and grades are somewhat limited. It is illustrative, however, of all the computations in the cost model operation. The additional calculations necessary to consider other grades and resources are identical to the procedures outlined below.

In order to maintain continuity throughout the example, the calculations are presented in a series of steps. These include the collection of data, the identification of each teacher type, and the actual model calculations. The cost model steps follow the procedures for allocating resources to the school reading program, to the reading program in each classroom, to tasks, and finally, to estimating costs. The computational steps are presented below.

COLLECTION OF DATA INPUTS

For each school, three sources of data are used: the Resource Questionnaire, the Teacher and Program Characteristic Questionnaires, and the Class Attendance

Records. For this example, a hypothetic school is defined with 105 students in grades 1 through 4. The pertinent parts of the Resource Questionnaire, assumed to have been completed by the principal of the hypothetical school, are shown on Table D-1. It is further assumed that a total of five Teacher and Program Characteristics Questionnaires were completed by individuals in this school. The pertinent sections of these questionnaires are shown in Table D-2. Finally, it is assumed that Attendance Records are also available which identifies the name of the teacher, and the ID number of all the students in the class. These lists are not included, but they are discussed in further detail in the next section.

In addition to these data, the standard unit costs presented in Chapter 3 form the information base for operating the program cost model.

IDENTIFICATION OF TEACHER TYPE

In order to identify the type of instructor teaching each class, a Student Class Comparison Matrix must be constructed using the Attendance Records for each class. This matrix, shown in Table D-3 below, is discussed in detail in Appendix B. In essence, it is formed by examining the number of the students in each class, and identifying students who appear on more than one roll. The common students between every pair of classes are counted and presented in the matrix. In our example, Class 22 has a total of 10 students. Three of these students also appear in Class 23, while seven appear in no other class.

Table D-3

STUDENT CLASS COMPARISON MATRIX

Class	Teacher's Name	Grade	Total No. Students	No. of Students in Common With Other Classes				
				21	22	23	41	42
21	Flynn	2	20	15	--	--	--	--
22	Batwinis	2	10	0	7	--	--	--
23	Jones	2	8	5	3	0	--	--
41	Johnson	4	25	0	0	0	19	--
42	Jones	4	6	0	0	0	6	0

Table D-1

RESOURCE QUESTIONNAIRE DATA

Item	Question No.	Data		
Number of Students	1	Grade 1:	20	
		2:	30	
		3:	30	
		4:	25	
		Total	105	
Facilities	2	6 Classrooms		
Type and Quantity of Staff	7	Title	Quantity	Percentage of Use in Reading
		Classroom Teacher	5.0	a
		Reading Specialist	0.5	90
		Teacher Aide	1.0	60
		Principal	1.0	a
		Secretary	1.0	a
Training	16	A total of three professional staff attended an 8-hour summer workshop where latest reading techniques were discussed.		
Equipment	23	Title	Quantity	Percentage of Use in Reading
		Slide Projector	4	75
Basal Readers	24	Quantity 220 - 399		

a. This value is calculated from other sources.

Table D-2

TEACHER AND PROGRAM CHARACTERISTICS QUESTIONNAIRE DATA

Item	Question No.	Data for Class				
		21	22	23	41	42
Experience (Years)	T1	2	3-5	10-19	3-5	10-19
Degree	T5	Bachelor	Bachelor	Master	Bachelor	Master
Reading Period Length (Min.)	B23a	1-15	51-60	31-40	51-60	31-40
Meeting Per Week	B23b	4 or 5	4 or 5	4 or 5	4 or 5	4 or 5
Total Reading (Hrs)	B43	5	5	5	5	5
Use of Teacher Aide	B25	Often	Sometimes	Often	Rarely	Often
Use of Slide Projectors	B36	Sometimes	Often	Often	Sometimes	Often
Use of Basal Readers	B33	Often	Often	Rarely	Often	Rarely
Compensatory Reading Class		No	No	Yes	No	Yes

It can be seen from the class matrix that Jones, the instructor for both Class 23 and Class 42, teaches only students who are also in other classes. All other teachers provide instruction to students in just one class. Thus, Jones is identified as the reading specialist (i.e., a Type 4 teacher), known to be available in the school from the Resource Questionnaire. The balance of the teachers are classified as regular classroom teachers. Classes 21 and 41 are identified as Type 1 teachers because the size of their class would indicate they teach only one grade in their respective classrooms. The small size of Class 22 would indicate that this teacher also has students of other grades in her class. It should be noted that the ETS survey included students in the second, fourth, and sixth grades only. Thus, attendance was not taken for students in other grades, even if they were in a class with second graders. In this example, an examination of the enrollment by grade will show that Class 22 (see Resource Questionnaire) is really a combined second and third grade class. The teacher of this class is thus identified as a Type 2 teacher.

The reason for identifying her as a Type 2 teacher is that the number of students identified as being in her class is not the true number of students she teaches. It is true that she teaches 10 second graders, as seen from Table D-3. However, additional third graders are also in the class. Because the number of students in the class is critical to later calculations, an estimate is required of the total number of students in the class. This estimate is made by dividing the total number of students in the school by the number of classroom teachers, or 105/5 = 21 students.

Table D-4 below identifies the teacher type and the number of students in each class.

Table D-4

	Class				
	21	22	23	41	42
Type of Teacher	1	2	4	1	4
Number of Students	20	21 [a]	8	25	6

a. Estimated. See text.

MODEL CALCULATIONS

For each resource item, the following parameters must be either determined from the data, or calculated based on the data, in order to operate the reading program cost model:

- school quantity (n),
- program factor (p),
- reading class factors (r),
- task factors (t), and
- unit cost (c).

Using these parameters as inputs, the model is operated in successive steps to derive estimates of the quantity and costs of each reading program resource at the various levels of analysis. The results of these successive operations are aggregated to form total school, reading class, and task costs. Continuing our example, these steps are demonstrated below for each of the reading program resources.

Classroom Teachers

There are three classroom teachers who completed questionnaires: 21, 22, and 41. The cost of these instructors must be allocated to both the school reading program and the individual reading classes. In addition, an average program factor for these teachers is needed to allocate other resources to the reading program. The necessary calculations are presented in Table D-5.

Reading Specialist

There is one reading specialist teaching in the school. Two groups of students are identified as receiving instruction from her. Because of our definition of a reading class, these classes are identified separately, and the costs for the reading specialist are allocated exclusively to them. These calculations are shown in Table D-6.

Table D-5

CALCULATIONS FOR CLASSROOM TEACHERS

Line No.	Item	Procedures	Calculation and Results
	Program Allocation Submodel		
1.1	Program Factor (p_1)	Look up the program factor for each class in Table C-1, using the length and frequency of reading period obtained from Teacher Questionnaires.	Class — Program Factor (p) 21 — .197 22 — .167 41 — .167
1.2	Average Teacher Program Factor (p_2)	Use Equation 2-12 to calculate the average program factor for above teachers.	p_2 = .176
1.3	Quantity of Classroom Teachers in Reading Program	Use both the number of classroom teachers in school (n_2), determined from Resource Questionnaire, and the average teacher program factor in Equation 2-1.	n_2p_2 = 0.88
	Reading Class Allocation Submodel		
1.4	Reading Class Factor (r)	From Equation 2-8, the reading class factor for classroom teachers is 1.	Class — Reading Class Factor (r) 21 — 1.0 22 — 1.0 41 — 1.0
1.5	Quantity of Individual Classroom Teacher Spent in Reading Program	Use the program factor (p) and the reading class factor (r) for each class in Equation 2-2. Because there is one teacher per classroom, n_1 = 1.	Class — n_1p_1r 21 — .197 22 — .167 41 — .167
	Task Allocation Submodel		
1.6	Fraction of Time Average Teacher Spends Receiving Training (f)	Determine total man-hours spent receiving training from Resource Questionnaires, divide by total all teachers, and divide by teaching hours per year. See discussion on page 33.	Total Hours of Training = 8 Average Staff Attending = 3 Total Man-hours = 8 x 3 = 24 Total Teachers = 6 Average Hours per Teacher = 24/6 = 4 Fraction for Training = 4/1080 = .0037
1.7	Task Factors Not Considering Training Received (t)	Look up in Table 2-4.	Task — Task Factor (t) Instruction — .70 Diagnosis — .15 Training — .00 Administration — .15
1.8	Task Factors Considering Training Received (t')	Use f and t in Equation 2-22 and Equation 2-23.	Task — Task Factor (t') Instruction — .6975 Diagnosis — .1494 Training — .0037 Administration — .1494
	Costing Submodel		
1.9	Salary (c_1)	Look up standard salary for each teacher in Table 3-2, using their experience and degree from Teacher Questionnaire.	Class — Salary (c_1) 21 — $9,193 22 — $9,998 41 — $9,998
1.10	Average Classroom Teacher Salary (c_2)	Determine average of above salaries.	c_2 = $9,730
1.11	School Reading Cost for all Classroom Teachers	Use Equation 2-4.	$n_2p_2c_2$ = $8,562
1.12	Reading Class Cost for Instructor	Use Equation 2-5 to calculate the total cost to a particular class. Divide by number of students in Table D-4 for cost per student.	Class — $n_1p_1rc_1$ — Cost Per Student 21 — $1,783 — $89.15 22 — $1,670 — $79.52 41 — $1,670 — $66.80
1.13	School Reading Costs by Task	Use Equation 2-6 and corrected task factor in Line 1.8. Use School Reading Cost for all classroom teachers.	Task — $n_2p_2t'c_2$ Instruction — $5,972 Diagnosis — $1,279 Training — $ 32 Administration — $1,279

Table D-6

CALCULATIONS FOR READING SPECIALIST

Line No.	Item	Procedure	Calculation and Results
	Program Allocation Submodel		
2.1	Program Factor (p)	Determine Program Factor from Resource Questionnaire.	Class — Program Factor (p) 23 — .900 42 — .900
2.2	Quantity of Reading Specialists in Reading Program	Use both the number of reading specialists (n) and the average program factor in Equation 2-1.	np = 0.450
	Reading Class Allocation Submodel		
2.3	Reading Class Factor (r)	Use Equations 2-10 and 2-11. Information on grades taught obtained from Resource Questionnaire. Class sizes obtained from Table D-4.	Class — No. of Students (s) 23 — 8 42 — 6 Total known students taught $s = 14$ Instruction in grades 1-4 Therefore: $f = 44$ Instruction in grades 2 and 4 Therefore: $e = 2$ $s_t = \left(\frac{s}{e}\right)(f) = 28$ Class — Reading Class Factor ($r = \frac{s}{s_t}$) 23 — .286 42 — .214
2.4	Quantity of Reading Specialist	Use Equation 2-2.	Class — npr 23 — .129 41 — .096
	Task Allocation Submodel		
2.5	Task Factors Considering Training Received (t')	Use procedure shown in Lines 1.6-1.8 in Table D-5. The same value of f is used in Equations 2-22 and 2-23, with new values of t used from Table 2-4.	Task — Task Factor (t') Instruction — .6476 Diagnosis — .1494 Training — .0535 Administration — .1494
	Costing Submodel		
2.6	Salary	Look up salary in Table 3-3, using experience and degree from Teacher Questionnaire.	c = $15,170
2.7	School Reading Cost for Reading Specialist	Use Equation 2-4.	npc = 6,827
2.8	Reading Class Cost for Instructor	Use Equation 2-5. Divide number of students in Table D-4.	Class — nprc — Cost per Student 23 — $1,951 — $243.77 42 — $1,462 — $243.77
2.9	School Reading Cost by Task	Use Equations 2-6 and corrected task factors in line 2.5. Use School Reading Cost for reading specialist.	Task — nptc Instruction — $4,421 Diagnosis — $1,020 Training — $ 366 Administration — $1,020

If no classes had been so identified (i.e., if the reading specialist did not complete any questionnaires), some of the calculations demonstrated below would not have been made. Instead, the cost of the reading specialist would have been allocated uniformly to classes, in a manner similar to that used later for the principal.

All Other Resources

The techniques for calculating the cost of the teacher aide and the allocation to the school reading program and reading classes using the measure of use reading class factors are demonstrated in Table D-7.

Since the rules for computing the principal and the secretary costs are similar, the calculations are combined on Table D-8. As shown, the average teacher program factor is used in conjunction with the uniform reading class factor.

The allocations of the cost of facilities, equipment, reading materials, and slide projectors are demonstrated on Tables D-9, D-10, and D-11, respectively.

Example Outputs of School and Class Costs

The calculations previously performed are summarized on Tables D-12 and D-13. The first table summarizes the school reading program costs, and the break out of these costs by task. These totals represent an estimate of the total cost for the entire school considering all grades. The second table summarizes the cost allocatable to particular classes in the school. These two tables represent the final output of the reading program cost model.

Table D-7

CALCULATIONS FOR TEACHER AIDES

Line No.	Item	Procedure	Calculation and Results
	Program Allocation Submodel		
3.1	Program Factor (p)	Determine Program Factor from Resource Questionnaire	p = .600
3.2	Quantity of Teacher Aides in Reading Program	Use both the number of aides (n) from Resource Questionnaire, and the program factor from above in Equation 2-1.	np = .600
	Reading Class Allocation Submodel		
3.3	Measure of Use (w)	Look up measure of use for each class in Table 2-2 considering the indicated use of teacher aides in Teacher Questionnaire.	Class: 21 22 23 41 42 w: 10 5 10 1 10
3.4	Weighted Measure of Use (w')	Use Equation 2-15 considering quantity of teacher type from Resource Questionnaire.	Class: 21 22 23 41 42 w': 10 5 25 1 25
3.5	Estimated use in each class ($\hat{w}$)	Use Equations 2-16 and 2-17 and data in Line 2.3 of Table D-6.	Class: 21 22 23 41 42 $\hat{w}$: 10 5 7.14 1 5.36
3.6	Average Measure of Use (z)	Use Equation 2-18 to calculate simple average of measure of use (w).	z = 7.2
3.7	Total School Use of Teacher Aides (w_t)	Use Equation 2-19.	$w_t = 54$
3.8	Reading Class Factor r	Use Equation 2-20.	Class: 21 22 23 41 42 r: .185 .093 .132 .019 .099
3.9	Quantity of Teacher Aides used in each class	Use Equation 2-2.	Class: 21 22 23 41 42 npr: .111 .056 .079 .011 .060
	Task Allocation Submodel		
3.10	Task Factors Considering Training Received (t')	Use procedure shown in Lines 1.6-1.8 in Table D-5. The same value of f is used in Equations 2-22 and 2-23, with new values of t used from Table 2-4.	Task — Task Factor (t') Instruction .7971 Diagnosis .0498 Training .0037 Administration .1494
	Cost Submodel		
3.11	Salary	Look up salary in Table 3-4.	c = $2,829
3.12	School Reading Cost for Teacher Aide	Use Equation 2-4.	npc = $1,698
3.13	Reading Class Cost for Teacher Aides	Use Equation 2-5. Divide by number of students in Table D-4.	Class: 21 22 23 41 42 nprc: $314 $157 $224 $31 $168 Cost per student: $15.72 $7.49 $28.08 $1.26 $28.08
3.14	School Reading Cost by Task	Use Equation 2-6 and corrected task factors in Line 3-10.	Task — nptc Instruction $1,353 Diagnosis $ 85 Training $ 6 Administration $ 254

Table D-8

CALCULATIONS FOR PRINCIPAL AND SECRETARY

Line No.	Item	Procedure	Calculation and Results
	Program Allocation Submodel		
4.1	Program Factor (p)	From Table 2-3 the Program Factor for these staff is equal to the Average Teacher Program Factor, found on Line 1.2 of Table D-7.	p = .176
4.2	Quantity of Administrative Staff used in Reading Program	Use both the number of administrative staff (n) from Resource Questionnaire, and the program factor from above.	Staff np Principal .176 Secretary .176
	Reading Class		
4.3	Reading Class Factor	From Table 2-3, the Uniform Class Factor is used for the calculation of the Reading Class Factor. Use Equation 2-13. Since these staff serve the entire school, the factor is calculated as the number of students in each class divided by the total number of students, or 105.	Class: 21 22 23 41 42 r: .191 .200 .076 .238 .057
	Task Allocation Submodel		
4.4	Task Factors considering Training Received (t')	Use procedure shown in Lines 1.6-1.8 in Table D-5. The same value of f is used in Equations 2-22 and 2-23, with new values of t used from Table 2-4.	Task Principal Task Factors (t') Secretary Task Factors (t) Instruction .0498 -- Diagnosis .0996 -- Training .1033 .0037 Administration .7473 .9963
	Costing Submodel		
4.5	Salary	Look up salary in Tables 3-7 and 3-8.	Principal Salary (c) = $19,270 Secretary Salary (c) = $ 3,775
4.6	School Reading Cost of these Staff	Use Equation 2-4.	Principal: npc = $3,392 Secretary: npc = $ 664
4.7	Reading Class Cost of these Staff	Use Equation 2-5. Divide by number of students in Table D-4.	Class: 21 22 23 41 42 Principal nprc: $646 $678 $258 $808 $194 Cost per student: $32.30 $32.30 $32.30 $32.30 $32.20 Secretary nprc: $128 $133 $51 $158 $38 Cost per student: $6.33 $6.33 $6.33 $6.33 $6.33
4.8	School Reading Cost by Task	Use Equation 2-6 and corrected task factors in Line 4.4.	Task Principal npt'c Secretary npt'c Instruction $ 169 $ 0 Diagnosis $ 338 $ 0 Training $ 350 $ 2 Administration $2,535 $662

Table D-9

CALCULATIONS FOR FACILITIES COSTS

Line No.	Item	Procedure	Calculation and Results
	Program Allocation Submodel		
5.1	Program Factor (p)	As discussed on pages 15 and 36, the calculation of p is different depending on whether school or class costs are being calculated. For school costs, use the average teacher program factor from Line 1.2 of Table D-5. For class costs, use the individual class program factors from Line 1.1 of Table D-5 and Line 2.1 of Table D-6.	School Program Factor p_2 = .176 Class Program Factor Class: 21 22 23 41 42 p_1: .197 .167 .900 .167 .900
5.2	Quantity of Classrooms in Reading Program	Use both the number of classrooms (n_2), determined from Resource Questionnaire, and the school program factor (p_2) from above in Equation 2-1.	n_2p_2 = 1.056
	Reading Class Allocation Submodel		
5.3	Reading Class Factor (r)	As discussed on pages 36 and 37, use the same reading class factor for each class as the instructor of that class. These are found on Line 1.4 in Table D-5 and Line 2.3 in Table D-6.	Class: 21 22 23 41 42 r: 1.000 1.000 .286 1.000 .286
5.4	Quantity of Facilities in Each Class	Use Equation 2-2. Remember that quantity of facilities for all subjects (n_1) is equal to the full time equivalent of the class instruction. Thus, a half-time reading specialist receives use of only one-half of a classroom. Note the similarity of this number and the equivalent value for the class instructor (see Line 1.5 in Table D-5 and Line 2.4 in Table D-6). Observing Class 21, 19.4 percent of the cost of both the instructor and the classroom are allocated to the class.	Class: 21 22 23 41 42 n_1p_1r: .194 .167 .129 .167 .096
	Task Allocation Submodel		
5.5	Task Factors (t)	Use values described on page 17.	Task — Task Factor Instruction .650 Diagnosis .100 Training .100 Administration .150
	Costing Submodel		
5.6	Cost of Facilities	See discussion of facility costs on pages 73 and 74.	Capital Cost = c_1 = \$54,810 Annualized Capital Cost = c_2 = \$3,480 Annual Cost = c_3 = \$1,425 Total Annualized Cost = c_4 = \$4,905
5.7	School Reading Cost for Facilities	Use Equation 2-4.	Capital Cost = $n_2p_2c_1$ = \$57,879 Annualized Capital Cost = $n_2p_2c_2$ = \$3,675 Operating Cost = $n_2p_2c_3$ = \$1,505 Total Annualized Cost = $n_2p_2c_4$ = \$5,180
5.8	Reading Class Cost for Facilities	Use Equation 2-5. Divide by number of students in Table D-4. Use Total Annualized Cost from above.	Class: 21 22 23 41 42 $n_1p_1c_4$: \$952 \$819 \$631 \$819 \$473 Cost per Student: \$47.58 \$39.00 \$78.83 \$32.77 \$78.83
5.9	School Reading Cost by Task	Use Equation 2-6 and the Total Annualized Cost from above.	Task — nptc Instruction \$3,367 Diagnosis \$ 518 Training \$ 518 Administration \$ 777

Table D-10

CALCULATION FOR SLIDE PROJECTORS

Line No.	Item	Procedure	Calculation and Results
	Program Allocation Submodel		
6.1	Program Factor (p)	Interpret the response found in Resource Questionnaire by discussion on page 38.	p = .750
6.2	Quantity of Slide Projectors Used in Reading	Use both the number of slide projectors in school (n) and the program factor from above in Equation 2-1.	np = 3.000
	Reading Class Submodel		
6.3	Reading Class Factor (r)	Using the procedure demonstrated on Lines 3.3 through 3.8 of Table D-7 for determining measures of use, calculate the reading class factors.	Class: 21 22 23 41 42 w: 5 10 10 5 10 w': 5 10 25 5 25 $\hat{w}$: 5 10 7.143 5 5.357 z = 8.0 w_t = 60 r: .083 .167 .119 .083 .089
	Task Factor Submodel		
6.4	Task Factors (t)	Use values described on page 40.	Task — Task Factor (t) Instruction — 1.000
	Costing Submodel		
6.5	Cost of Slide Projectors	Determine cost of slide projectors from Tables 3-10 and 3-11.	Capital Cost = c_1 = \$109 Annualized Capital Cost = c_2 = \$ 17 Operating Cost = c_3 = \$ 28 Total Annualized Cost = c_4 = \$ 45
6.6	School Reading Cost for Slide Projectors	Use Equation 2-4.	Capital Cost = npc_1 = \$327 Annualized Capital Cost = npc_2 = \$ 50 Operating Cost = npc_3 = \$ 85 Total Annualized Cost = npc_4 = \$135
6.7	Reading Class Cost for Slide Projectors	Use Equation 2-5. Divide by number of students in Table D-4. Use Total Annualized Cost from above.	Class: 21 22 23 41 42 npc_4: \$11 \$23 \$16 \$11 \$12 Cost per student: \$.56 \$1.07 \$2.01 \$.45 \$2.01
6.8	School Reading Cost by Task	Use Equation 2-6 and the Total Annualized Cost from above.	Task — $nptc_4$ Instruction — \$135

Table D-11

CALCULATIONS FOR BASAL READERS

Line No.	Item	Procedure	Calculation and Results
	Program Allocation Submodel		
7.1	Program Factor (p)	Because basal readers are only used in reading program, p = 1.0.	p = 1.000
7.2	Quantity of Basal Readers in Reading Program	Use both the mid-point of the range of basal readers indicated in Resource Questionnaire, and the program factor in Equation 2-1.	np = 300
	Reading Class Submodel		
7.3	Reading Class Factor (r)	Using the procedure on Lines 3.3 through 3.8 of Table D-7 for determining measures of use, calculate the reading class factors.	Class: 21 22 23 41 42 r: .208 .208 .015 .208 .011
	Task Factor Submodel		
7.4	Task Factor (t)	Use values described on page 41.	Task — Task Factor Instruction .900 Diagnosis .100
	Costing Submodel		
7.5	Cost of Basal Readers	Determine cost of basal readers from Table 3-12.	Capital Cost = c_1 = \$5.04 Annualized Capital Cost = c_2 = \$ .72 Operating Cost = c_3 = \$ .50 Total Annualized Cost = c_4 = \$1.22
7.6	School Reading Cost for Basal Readers	Use Equation 2-4.	Capital Cost = npc_1 = \$1,512 Annualized Capital Cost = npc_2 = \$ 216 Operating Cost = npc_3 = \$ 150 Total Annualized Cost = npc_4 = \$ 366
7.7	Reading Class Cost for Basal Readers	Use Equation 2-5. Divide by number of students in Table D-4. Use Total Annualized Cost from above.	Class: 21 22 23 41 42 npc_4: \$79 \$79 \$6 \$79 \$4 Cost per student: \$3.94 \$3.75 \$.70 \$3.15 \$.70
7.8	School Reading Cost by Task	Use Equation 2-6 and the Total Annualized Cost from above.	Task — $nptc_4$ Instruction \$329 Diagnosis \$ 37

Table D-12

EXAMPLE OUTPUT: SCHOOL READING PROGRAM COSTS
(1973 dollars)

Number of Students: 105

Resource	Quantity		Reading Program Cost ($)				Annualized Cost by Task ($)			
	School Total	Reading Total	Capital Investment	Operating Cost	Annualized Cost	Percent of Total	Instruction	Diagnostic	Training	Administration
Classroom Teacher	5.0	0.880	--	8,562	8,562	31.9	5,972	1,279	32	1,279
Reading Specialist	0.5	0.450	--	6,827	6,827	25.5	4,421	1,020	366	1,020
Teacher Aide	1.0	0.600	--	1,698	1,698	6.3	1,353	85	6	254
Secretary	1.0	0.176	--	664	664	2.5	--	--	2	662
Principal	1.0	0.176	--	3,392	3,392	12.6	169	338	350	2,535
Staff Subtotal	8.5	2.282	--	21,143	21,143	78.8	11,915	2,722	756	5,750
Facilities	6	1.056	57,879	1,505	5,180	19.3	3,367	518	518	777
Slide Projectors	4	3.000	327	85	135	.5	135	--	--	--
Basal Readers	300	300	1,512	150	366	1.4	329	37	--	--
TOTAL			59,718	22,883	26,824	100.0	15,746	3,277	1,274	6,527
COST PER STUDENT			568.74	217.93	255.47		149.97	31.21	12.13	62.16

Table D-13

EXAMPLE OUTPUT: READING PROGRAM COSTS BY CLASS
(average cost per student in 1973 dollars)

Class:	21	22	23	41	42
Type:	1	2	4	1	4
Number of Students:	20	10[a]	8	25	6
Compensatory Reading Class:	No	No	Yes	No	Yes
Resource					
Class Instructor	89.15	79.52	243.77	66.80	243.77
Teacher Aide	15.72	7.49	28.08	1.26	28.08
Secretary	6.33	6.33	6.33	6.33	6.33
Principal	32.30	32.30	32.30	32.30	32.30
Staff Subtotal	143.50	125.64	310.48	106.69	310.48
Facilities	47.58	39.00	78.83	32.77	78.83
Slide Projector	.56	1.07	2.01	.45	2.01
Basal Readers	3.94	3.75	.70	3.15	.70
TOTAL	195.58	169.46	392.02	143.06	392.02

a. There are actually 10 second graders in Class 22 (see Table D-1). However, because this is a multi-grade regular classroom, an estimate of 21 was made as to the total number of students receiving instruction in this class. See text for explanation.

APPENDIX E

ANALYSIS OF AVERAGE SCHOOL COSTS

APPENDIX E

ANALYSIS OF AVERAGE SCHOOL COSTS

Using the grade and program averages calculated for all 260 schools in the sample, a composite average was calculated for each of the major cost categories for various combinations of grades, programs, funding sources, and clusters. In addition, the standard deviation was calculated for this composite average. Finally, the quartiles were determined to present additional information as to the shape of the distribution of school averages around the composite mean. A summary of these results is presented in Chapter 4, along with a discussion of clusters.

Tables E-1 through E-4 present the composite averages and standard deviations (SD) for all schools which had an identified compensatory reading program. These values are differentiated by grade and funding sources. Tables E-5 through E-48 present similar information about each of the eleven clusters that are represented in the first four tables. The final Table, E-49, presents information about cluster 12, or the 45 schools with no identified compensatory reading program.

Table E-1

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR ALL CLUSTERS, ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	50		32		36		82		200	
CLASS INSTRUCTOR	144.66	151.65	99.94	74.00	72.13	46.72	102.13	109.97	107.81	111.36
TEACHER AIDE	25.81	44.93	13.77	17.60	5.46	7.27	6.26	11.12	12.20	25.77
READING SPECIALIST	19.30	27.63	16.16	20.11	9.61	12.65	20.99	71.22	20.99	48.98
OTHER STAFF	22.53	20.57	28.09	27.79	19.32	20.90	27.32	42.80	24.80	32.53
STAFF SUBTOTAL	212.30	154.78	157.95	85.04	106.31	50.51	164.69	137.23	165.00	127.80
FACILITIES SUBTOTAL	66.55	66.19	47.80	34.66	34.33	21.52	49.71	58.23	50.86	53.30
EQUIPMENT SUBTOTAL	5.83	6.25	2.91	1.85	3.15	2.59	4.07	4.61	4.16	4.60
MATERIALS SUBTOTAL	12.96	8.64	11.96	4.09	11.77	5.36	16.55	28.03	14.06	18.80
DISTRICT CENTER SUBTOTAL	5.15	12.71	3.92	8.15	7.65	11.59	3.46	6.43	4.71	9.64
TOTAL COST	302.79	229.16	224.63	116.92	163.20	73.48	238.48	195.95	238.79	183.67
LOW	86.17		99.51		72.83		78.13		72.83	
1ST QUARTILE	149.65		152.25		99.90		135.42		133.66	
2ND QUARTILE	231.87		188.11		145.26		180.93		182.58	
3RD QUARTILE	349.29		287.76		212.52		264.18		267.97	
HIGH	1125.60		572.43		364.70		1396.59		1396.59	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	38		20		28		54		140	
CLASS INSTRUCTOR	69.66	36.18	63.01	21.79	65.67	37.85	66.02	33.50	66.51	33.53
TEACHER AIDE	11.39	32.49	11.33	18.70	7.03	11.05	3.65	6.03	7.52	19.46
READING SPECIALIST	14.06	23.20	15.37	27.50	6.16	13.00	17.64	37.71	14.05	28.97
OTHER STAFF	23.54	20.98	23.86	27.98	16.37	18.26	25.35	36.44	22.73	28.39
STAFF SUBTOTAL	118.65	66.34	112.76	57.02	95.23	51.06	112.65	68.96	110.81	63.27
FACILITIES SUBTOTAL	33.92	19.80	31.63	11.75	31.68	17.80	31.43	17.09	32.19	17.24
EQUIPMENT SUBTOTAL	2.60	2.76	5.41	10.17	3.08	2.67	2.32	1.85	2.99	4.46
MATERIALS SUBTOTAL	14.46	8.71	13.07	5.71	12.01	5.92	15.54	25.83	14.19	16.96
DISTRICT CENTER SUBTOTAL	4.91	13.72	1.56	3.68	7.41	12.39	3.99	6.91	4.57	10.15
TOTAL COST	174.54	87.03	164.43	67.89	149.61	74.56	165.93	93.26	166.75	86.35
LOW	83.85		78.14		72.40		53.68		53.68	
1ST QUARTILE	137.98		116.24		102.27		117.90		115.40	
2ND QUARTILE	153.87		163.06		123.18		138.60		143.75	
3RD QUARTILE	199.12		179.53		161.17		183.98		187.03	
HIGH	615.75		352.23		384.95		545.74		615.75	

Table E-2

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR ALL CLUSTERS, FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	37		28		29		68		162	
CLASS INSTRUCTOR	171.07	175.53	96.23	70.89	70.32	41.68	106.36	128.44	112.93	126.77
TEACHER AIDE	27.28	37.99	16.39	19.03	6.48	10.01	8.39	17.04	13.71	24.21
READING SPECIALIST	14.89	24.97	19.90	21.79	11.88	19.74	26.98	72.86	20.29	50.34
OTHER STAFF	19.78	14.96	27.80	26.85	19.93	21.03	26.35	48.62	23.95	35.26
STAFF SUBTOTAL	232.94	175.18	160.32	87.95	108.52	49.03	168.06	166.52	170.88	147.40
FACILITIES SUBTOTAL	76.80	77.05	47.69	35.00	34.29	19.05	51.86	66.43	53.68	60.26
EQUIPMENT SUBTOTAL	5.94	6.33	3.25	2.08	3.33	2.71	3.96	4.39	4.18	4.47
MATERIALS SUBTOTAL	13.17	9.42	11.91	5.78	11.58	5.17	14.72	21.07	13.32	14.72
DISTRICT CENTER SUBTOTAL	6.42	14.44	4.38	8.62	6.73	8.19	3.74	6.89	5.00	9.61
TOTAL COST	335.27	259.46	227.55	119.72	164.46	67.30	242.32	232.68	247.06	209.45
LOW	86.17		92.07		81.29		54.57		54.57	
1ST QUARTILE	171.22		136.28		107.40		125.63		131.19	
2ND QUARTILE	223.32		209.39		159.24		187.43		189.06	
3RD QUARTILE	374.95		258.78		197.52		259.83		262.82	
HIGH	1125.60		572.43		365.29		1396.59		1396.59	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	29		17		17		34		97	
CLASS INSTRUCTOR	82.41	46.10	75.57	30.29	88.90	47.90	83.64	63.45	81.38	50.47
TEACHER AIDE	13.52	37.16	10.70	19.62	6.49	10.80	2.97	4.13	8.09	22.63
READING SPECIALIST	8.97	18.83	21.48	30.89	8.19	23.38	17.44	45.50	14.00	33.06
OTHER STAFF	23.01	22.71	18.21	26.85	10.01	6.82	24.58	41.72	20.44	30.08
STAFF SUBTOTAL	127.91	76.25	125.96	68.13	105.59	54.98	128.63	105.61	123.91	82.95
FACILITIES SUBTOTAL	40.68	23.99	38.65	15.84	40.02	22.10	38.97	29.03	39.61	24.11
EQUIPMENT SUBTOTAL	2.44	2.28	6.37	11.18	3.91	2.66	2.58	2.53	3.44	5.28
MATERIALS SUBTOTAL	14.67	9.15	12.71	5.72	13.51	5.32	17.20	32.40	15.01	19.97
DISTRICT CENTER SUBTOTAL	5.56	15.57	1.83	3.94	8.96	15.32	2.95	4.99	4.59	11.27
TOTAL COST	191.26	101.54	185.53	82.65	171.98	79.24	190.34	143.97	186.55	111.18
LOW	92.69		101.61		53.04		69.65		53.04	
1ST QUARTILE	142.21		118.71		122.00		115.89		119.66	
2ND QUARTILE	178.82		174.48		153.47		145.08		155.54	
3RD QUARTILE	210.03		228.50		203.79		198.13		207.32	
HIGH	615.75		404.93		384.95		758.18		758.18	

Table E-3

S'UDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR ALL CLUSTERS, FOR GRADE 4

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	43		29		28		66		166	
CLASS INSTRUCTOR	138.42	140.77	107.03	88.35	85.37	78.24	98.73	125.45	108.21	117.06
TEACHER AIDE	29.30	56.10	14.54	17.42	4.23	6.94	4.92	8.20	12.80	31.55
READING SPECIALIST	18.56	30.20	14.00	20.99	7.25	19.32	26.02	73.47	18.82	50.42
OTHER STAFF	23.52	21.53	29.39	29.91	19.40	23.74	21.83	21.80	23.18	23.65
STAFF SUBTOTAL	209.79	150.97	164.97	88.71	116.26	81.30	151.51	137.39	163.01	129.04
FACILITIES SUBTOTAL	66.10	64.09	50.44	36.78	40.00	34.23	45.98	55.61	50.96	52.93
EQUIPMENT SUBTOTAL	5.76	6.40	2.83	1.88	3.40	2.85	3.65	4.81	4.01	6.76
MATERIALS SUBTOTAL	12.67	8.39	11.69	6.27	13.13	7.09	17.46	30.97	14.48	20.41
DISTRICT CENTER SUBTOTAL	3.41	7.42	4.32	8.47	7.80	12.63	3.50	6.29	4.34	8.39
TOTAL COST	297.72	219.05	234.25	122.73	180.59	120.09	222.10	197.52	236.81	184.64
LOW	85.23		92.33		81.44		55.68		55.68	
1ST QUARTILE	152.70		149.19		103.78		133.26		124.59	
2ND QUARTILE	235.36		193.70		123.22		166.44		178.81	
3RD QUARTILE	354.11		290.71		260.88		229.47		267.64	
HIGH	1125.59		572.43		654.73		1400.19		1400.19	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	28		14		15		39		96	
CLASS INSTRUCTOR	62.82	37.86	58.83	17.81	62.50	29.75	61.47	23.43	61.64	28.33
TEACHER AIDE	4.90	7.54	4.45	9.23	6.66	13.51	2.58	4.48	4.17	8.06
READING SPECIALIST	12.18	23.23	12.58	17.81	6.57	24.42	16.12	41.85	12.96	31.56
OTHER STAFF	23.62	19.06	20.67	30.87	14.40	11.42	26.97	46.50	23.11	33.72
STAFF SUBTOTAL	103.52	43.50	96.53	54.20	90.14	57.16	107.14	65.02	101.88	56.13
FACILITIES SUBTOTAL	30.61	16.22	30.74	9.73	31.45	11.38	28.55	10.76	29.93	12.43
EQUIPMENT SUBTOTAL	1.92	1.55	3.25	2.33	2.70	2.49	2.45	2.19	2.45	2.11
MATERIALS SUBTOTAL	14.15	8.96	12.40	5.84	11.90	6.77	12.60	5.12	12.92	6.74
DISTRICT CENTER SUBTOTAL	6.05	15.76	1.99	4.30	3.04	4.25	4.50	7.71	4.36	10.07
TOTAL COST	156.26	57.96	144.91	62.30	139.24	73.39	155.24	71.23	151.53	65.97
LOW	70.72		75.39		63.17		32.61		32.61	
1ST QUARTILE	112.43		109.67		107.81		112.79		109.50	
2ND QUARTILE	138.49		135.68		115.88		142.47		133.40	
3RD QUARTILE	199.36		155.73		135.64		183.09		180.38	
HIGH	268.53		329.61		331.68		380.77		380.77	

Table E-4

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR ALL CLUSTERS, FOR GRADE 6

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	34		23		24		47		128	
CLASS INSTRUCTOR	147.86	170.04	83.12	74.95	89.80	102.08	84.58	81.31	102.10	111.81
TEACHER AIDE	36.05	78.57	13.83	16.86	3.14	4.80	4.66	12.47	14.35	39.86
READING SPECIALIST	21.32	38.26	16.07	22.77	4.77	9.84	33.79	87.38	21.85	56.76
OTHER STAFF	24.30	22.85	32.80	29.84	14.38	16.48	30.62	40.39	26.29	35.07
STAFF SUBTOTAL	229.53	198.16	145.83	95.52	112.09	103.52	153.63	128.31	164.60	143.96
FACILITIES SUBTOTAL	67.88	69.20	39.04	31.94	42.30	44.83	39.87	27.44	47.62	46.86
EQUIPMENT SUBTOTAL	6.04	7.24	3.21	2.08	2.89	2.83	4.39	5.78	4.34	5.41
MATERIALS SUBTOTAL	13.89	8.86	12.87	6.33	12.42	7.70	15.82	24.78	14.14	16.20
DISTRICT CENTER SUBTOTAL	3.52	7.24	4.82	9.31	7.41	13.41	3.27	5.37	4.39	8.61
TOTAL COST	320.87	271.46	205.76	127.40	177.12	153.45	216.98	150.52	235.09	193.17
LOW	79.30		78.79		43.31		46.10		43.31	
1ST QUARTILE	144.01		127.41		93.76		131.08		118.96	
2ND QUARTILE	230.90		153.32		111.97		176.04		170.39	
3RD QUARTILE	396.60		260.45		190.25		267.69		276.54	
HIGH	1278.87		572.43		739.01		864.03		1278.87	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	27		13		20		36		96	
CLASS INSTRUCTOR	60.38	21.51	51.22	22.26	54.23	26.97	60.44	26.60	57.88	24.67
TEACHER AIDE	4.32	7.01	6.25	9.05	4.23	7.84	4.44	8.33	4.61	7.88
READING SPECIALIST	13.54	24.01	10.76	18.62	4.62	9.51	13.61	21.17	11.33	19.94
OTHER STAFF	21.48	19.94	28.74	33.38	18.66	23.46	26.78	38.98	23.86	30.55
STAFF SUBTOTAL	99.72	36.14	96.96	[illegible].34	81.75	47.88	105.27	65.98	97.68	54.23
FACILITIES SUBTOTAL	28.15	9.23	23.50	9.57	24.75	9.84	28.37	11.41	26.89	10.30
EQUIPMENT SUBTOTAL	2.23	2.82	2.78	2.56	2.04	1.73	2.49	1.90	2.36	2.23
MATERIALS SUBTOTAL	13.90	9.69	12.23	5.89	11.58	5.96	12.24	4.29	12.57	6.60
DISTRICT CENTER SUBTOTAL	4.88	15.51	2.15	4.43	3.64	4.96	4.66	7.89	4.16	9.85
TOTAL COST	148.86	43.89	137.61	66.97	123.75	61.29	153.02	77.58	143.67	64.74
LOW	79.99		30.46		69.17		53.14		30.46	
1ST QUARTILE	120.15		108.68		86.55		107.19		105.77	
2ND QUARTILE	143.40		118.75		107.39		137.50		126.75	
3RD QUARTILE	178.27		144.29		123.20		164.57		168.64	
HIGH	225.20		315.14		321.12		515.23		515.23	

Table E-5

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 1 FOR ALL GRADES

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	8		7		5		9		29	
CLASS INSTRUCTOR	195.41	209.64	69.71	25.04	72.46	33.39	70.08	26.28	104.97	121.27
TEACHER AIDE	25.55	35.79	5.37	6.17	7.40	9.10	6.43	6.67	11.00	20.92
READING SPECIALIST	13.05	27.35	19.12	18.43	15.75	14.80	48.01	81.88	25.83	49.41
OTHER STAFF	25.69	13.84	19.15	13.65	42.88	33.42	21.67	25.04	25.83	22.25
STAFF SUBTOTAL	259.70	211.20	113.35	33.14	138.50	50.03	144.20	117.18	167.63	130.40
FACILITIES SUBTOTAL	89.77	87.38	29.94	9.97	34.04	14.55	32.07	13.09	47.81	52.01
EQUIPMENT SUBTOTAL	7.12	5.44	3.12	1.45	3.98	2.20	3.81	3.25	4.59	3.76
MATERIALS SUBTOTAL	10.72	7.13	10.09	3.10	12.45	6.75	13.20	5.10	11.63	5.52
DISTRICT CENTER SUBTOTAL	15.57	27.59	1.97	2.68	13.34	7.42	1.61	2.54	7.57	15.65
TOTAL COST	382.87	320.20	158.47	41.38	202.30	62.99	194.89	129.60	239.23	199.41
LOW	102.59		103.26		92.29		87.09		87.09	
1ST QUARTILE	158.98		124.13		210.00		116.96		117.83	
2ND QUARTILE	250.60		169.11		224.26		131.04		187.81	
3RD QUARTILE	502.93		190.24		241.70		195.48		241.99	
HIGH	1016.50		208.15		243.24		459.53		1016.50	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	6		2		3		4		15	
CLASS INSTRUCTOR	97.51	71.06	67.71	9.11	60.48	15.77	59.96	15.24	76.12	47.20
TEACHER AIDE	35.52	80.95	0.0	0.0	9.78	7.89	2.90	2.75	16.94	51.06
READING SPECIALIST	6.76	15.29	20.30	28.72	15.86	13.96	78.37	112.59	29.28	62.07
OTHER STAFF	29.21	13.72	10.96	3.53	40.41	44.33	17.15	12.67	25.80	22.06
STAFF SUBTOTAL	168.48	135.55	98.98	23.14	126.53	43.84	158.39	122.64	148.13	103.64
FACILITIES SUBTOTAL	49.78	42.37	29.96	2.37	26.09	6.28	27.33	7.22	36.41	28.06
EQUIPMENT SUBTOTAL	3.80	3.09	2.91	1.20	3.44	3.14	2.78	1.53	3.34	2.37
MATERIALS SUBTOTAL	10.85	5.52	9.37	0.53	10.17	5.08	10.91	2.50	10.53	4.03
DISTRICT CENTER SUBTOTAL	15.43	31.04	2.65	3.75	10.53	6.06	0.77	1.55	8.84	19.85
TOTAL COST	248.34	182.58	143.86	31.00	176.77	36.42	200.17	121.88	207.25	129.84
LOW	140.16		121.95		145.79		118.07		118.07	
1ST QUARTILE	160.90		132.91		156.71		129.43		142.97	
2ND QUARTILE	171.76		143.86		167.63		151.26		165.78	
3RD QUARTILE	217.94		154.82		192.26		221.98		198.06	
HIGH	615.75		165.78		216.89		380.14		615.75	

Table E-6

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 1 FOR GRADE 2

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	7		6		4		7		24	
CLASS INSTRUCTOR	181.55	210.54	69.41	21.93	63.31	22.04	73.15	29.09	102.19	121.12
TEACHER AIDE	23.15	36.38	5.20	7.85	5.51	9.58	5.82	9.22	10.67	21.44
READING SPECIALIST	10.01	17.55	22.30	17.95	13.12	15.68	22.63	38.67	17.28	24.63
OTHER STAFF	24.21	13.68	17.30	13.92	48.24	27.73	20.32	28.26	25.36	22.71
STAFF SUBTOTAL	238.93	209.73	114.21	37.58	130.17	59.16	121.93	84.27	155.50	130.80
FACILITIES SUBTOTAL	79.47	87.70	30.69	10.11	31.66	12.67	31.37	10.89	45.28	50.82
EQUIPMENT SUBTOTAL	5.69	3.92	2.96	1.90	3.81	2.24	6.35	9.55	4.89	5.59
MATERIALS SUBTOTAL	9.77	6.34	10.05	3.54	14.68	6.81	14.70	4.98	12.09	5.63
DISTRICT CENTER SUBTOTAL	17.79	29.02	2.30	2.68	12.37	8.20	2.07	2.74	8.43	16.84
TOTAL COST	351.65	318.42	160.22	45.06	192.69	74.37	176.42	103.21	226.19	193.05
LOW	148.08		103.26		81.29		105.80		81.29	
1ST QUARTILE	161.51		132.27		188.52		116.88		128.53	
2ND QUARTILE	221.38		151.95		227.92		123.32		176.50	
3RD QUARTILE	376.29		193.88		232.08		187.43		226.09	
HIGH	1016.50		220.58		233.62		397.17		1016.50	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		2		1		4		12	
CLASS INSTRUCTOR	124.11	71.00	65.31	9.09	46.26	0.0	66.74	14.05	88.70	53.88
TEACHER AIDE	46.21	87.03	0.0	0.0	1.92	0.0	3.33	3.16	20.53	57.20
READING SPECIALIST	0.0	0.0	20.30	28.72	0.0	0.0	78.37	112.59	29.51	69.94
OTHER STAFF	27.13	14.24	10.95	3.53	8.51	0.0	18.71	12.00	20.07	12.83
STAFF SUBTOTAL	197.44	140.47	96.57	41.34	56.69	0.0	167.15	127.47	158.81	118.82
FACILITIES SUBTOTAL	65.35	42.69	33.28	11.45	19.79	0.0	29.53	9.65	44.27	32.52
EQUIPMENT SUBTOTAL	4.27	3.28	3.37	3.12	5.86	0.0	3.26	1.18	3.91	2.40
MATERIALS SUBTOTAL	10.77	6.06	9.49	0.72	9.21	0.0	11.27	3.01	10.60	4.06
DISTRICT CENTER SUBTOTAL	17.96	34.00	2.65	3.75	8.96	0.0	0.77	1.55	8.93	22.15
TOTAL COST	295.79	188.98	145.36	60.37	100.51	0.0	211.99	127.27	226.51	150.45
LOW	155.54		102.67		100.51		118.07		100.51	
1ST QUARTILE	161.12		124.01		100.51		138.94		138.94	
2ND QUARTILE	244.52		145.36		100.51		165.79		173.40	
3RD QUARTILE	302.03		166.70		100.51		238.84		258.90	
HIGH	615.75		188.05		100.51		398.30		615.75	

Table E-7

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 1 FOR GRADE 4

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	6		6		3		8		23	
CLASS INSTRUCTOR	140.50	131.99	84.49	40.56	49.27	10.89	59.08	12.44	85.67	75.17
TEACHER AIDE	32.78	39.52	5.79	6.43	11.32	16.61	4.76	5.88	13.19	23.38
READING SPECIALIST	16.54	40.52	17.98	19.87	10.39	18.00	23.23	35.84	18.42	30.32
OTHER STAFF	28.52	13.80	21.90	12.50	56.79	44.59	20.19	26.10	27.60	24.96
STAFF SUBTOTAL	218.33	155.12	130.16	38.03	127.77	66.06	107.26	60.92	144.88	98.78
FACILITIES SUBTOTAL	69.80	55.49	36.40	14.23	21.63	4.42	27.48	6.62	40.08	33.32
EQUIPMENT SUBTOTAL	7.07	5.63	3.79	1.29	5.28	2.20	3.35	1.91	4.68	3.42
MATERIALS SUBTOTAL	12.15	6.87	9.59	2.89	13.74	6.90	13.52	5.62	12.17	5.41
DISTRICT CENTER SUBTOTAL	5.79	12.87	2.30	2.68	14.68	8.20	1.81	2.64	4.66	8.14
TOTAL COST	313.14	218.13	182.24	40.22	183.12	76.06	153.41	73.78	206.47	134.02
LOW	85.23		108.45		102.01		89.18		85.23	
1ST QUARTILE	172.35		154.42		147.64		118.30		120.35	
2ND QUARTILE	269.12		198.74		192.48		135.02		172.60	
3RD QUARTILE	385.15		205.54		223.27		152.23		242.50	
HIGH	691.49		240.82		254.06		324.55		691.49	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		2		1		3		11	
CLASS INSTRUCTOR	70.21	48.75	87.62	6.26	92.16	0.0	66.54	20.47	74.37	34.79
TEACHER AIDE	1.62	3.63	0.0	0.0	1.90	0.0	3.36	3.05	1.83	2.92
READING SPECIALIST	7.49	16.75	20.30	28.72	0.0	0.0	97.26	129.91	33.62	72.63
OTHER STAFF	33.97	8.06	10.96	3.54	8.51	0.0	17.89	15.53	23.09	13.91
STAFF SUBTOTAL	113.30	40.42	118.88	25.99	102.57	0.0	185.05	129.46	132.91	72.20
FACILITIES SUBTOTAL	30.77	17.76	40.69	9.01	38.05	0.0	33.67	9.70	34.02	13.01
EQUIPMENT SUBTOTAL	2.35	1.52	3.05	1.72	7.43	0.0	1.85	0.35	2.80	1.94
MATERIALS SUBTOTAL	10.16	6.16	9.41	0.45	11.12	0.0	11.11	3.16	10.37	4.20
DISTRICT CENTER SUBTOTAL	16.18	34.64	2.65	3.75	8.96	0.0	0.0	0.0	8.65	23.23
TOTAL COST	172.74	61.97	174.69	40.92	168.13	0.0	231.68	123.65	188.75	74.33
LOW	120.06		145.75		168.13		135.19		120.06	
1ST QUARTILE	132.24		160.22		168.13		161.99		134.16	
2ND QUARTILE	133.14		174.69		168.13		188.80		168.13	
3RD QUARTILE	222.37		189.15		168.13		279.93		212.99	
HIGH	255.89		203.62		168.13		371.06		371.06	

Table E-8

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 1 FOR GRADE 6

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	5		5		1		6		17	
CLASS INSTRUCTOR	151.73	139.43	55.79	15.53	126.71	0.0	76.62	55.40	95.53	86.92
TEACHER AIDE	34.87	43.50	4.04	5.99	0.0	0.0	4.56	8.60	13.05	26.81
READING SPECIALIST	19.85	44.39	21.48	19.94	26.29	0.0	62.09	99.95	35.62	64.20
OTHER STAFF	25.00	13.78	24.28	12.49	8.37	0.0	28.30	29.36	24.98	19.43
STAFF SUBTOTAL	231.46	162.98	105.58	38.12	161.37	0.0	171.57	151.08	169.18	120.91
FACILITIES SUBTOTAL	77.20	58.34	24.72	3.78	54.22	0.0	34.03	23.63	45.18	39.14
EQUIPMENT SUBTOTAL	7.65	7.76	2.65	1.65	3.95	0.0	3.57	3.62	4.52	4.93
MATERIALS SUBTOTAL	12.89	7.45	10.34	2.20	4.94	0.0	13.36	6.42	11.04	5.74
DISTRICT CENTER SUBTOTAL	6.95	14.03	1.65	2.41	17.22	0.0	1.64	3.06	4.12	8.43
TOTAL COST	336.14	229.50	144.95	42.47	241.70	0.0	224.17	174.36	234.04	169.99
LOW	79.36		89.54		241.70		46.10		46.10	
1ST QUARTILE	237.51		116.44		241.70		74.16		116.44	
2ND QUARTILE	273.05		153.32		241.70		199.55		197.00	
3RD QUARTILE	398.10		168.47		241.70		355.82		273.05	
HIGH	692.75		197.00		241.70		459.53		692.75	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		2		2		2		11	
CLASS INSTRUCTOR	58.45	10.10	56.65	11.17	52.23	9.41	51.93	29.21	55.81	12.52
TEACHER AIDE	0.0	0.0	0.0	0.0	13.71	5.61	4.70	1.75	3.35	5.76
READING SPECIALIST	7.49	16.75	20.30	28.72	23.79	3.54	22.31	7.18	15.48	16.15
OTHER STAFF	33.97	8.06	10.96	3.53	56.36	49.03	14.42	11.40	30.30	23.42
STAFF SUBTOTAL	99.92	29.77	87.91	21.08	146.09	37.55	93.37	35.19	104.94	33.16
FACILITIES SUBTOTAL	28.26	4.74	23.20	1.23	23.13	5.13	21.70	9.83	25.21	5.50
EQUIPMENT SUBTOTAL	2.85	0.98	2.92	0.31	1.70	1.26	1.54	0.98	2.42	1.03
MATERIALS SUBTOTAL	9.38	5.14	9.30	0.56	10.02	7.10	12.07	0.87	9.97	4.12
DISTRICT CENTER SUBTOTAL	16.18	34.64	2.65	3.75	11.32	8.34	0.0	0.0	9.89	23.21
TOTAL COST	156.58	34.36	125.99	24.47	192.26	34.83	128.68	45.13	152.43	37.89
LOW	113.18		108.68		167.63		96.77		96.77	
1ST QUARTILE	143.45		117.33		179.94		112.73		128.24	
2ND QUARTILE	144.64		125.99		192.26		128.68		144.64	
3RD QUARTILE	181.31		134.64		204.57		144.63		174.47	
HIGH	208.33		143.29		216.89		160.59		216.89	

Table E-9

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 2 FOR ALL GRADES

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	8		2		7		11		28	
CLASS INSTRUCTOR	146.30	164.18	178.68	214.64	105.83	78.64	87.13	58.25	115.27	110.71
TEACHER AIDE	29.58	30.21	51.95	32.60	5.33	5.44	4.67	8.60	12.73	21.89
READING SPECIALIST	14.39	27.07	0.0	0.0	7.91	12.04	51.23	163.32	26.21	102.64
OTHER STAFF	33.53	31.14	15.42	0.75	10.62	8.84	29.31	32.46	24.85	27.36
STAFF SUBTOTAL	214.80	179.75	246.05	247.98	129.68	72.75	172.34	167.41	179.07	153.53
FACILITIES SUBTOTAL	63.95	69.49	78.48	88.98	50.49	34.41	43.76	36.22	53.69	49.13
EQUIPMENT SUBTOTAL	4.71	5.66	3.50	2.15	3.72	4.28	4.28	6.12	4.21	5.16
MATERIALS SUBTOTAL	11.03	4.51	7.86	4.71	11.33	6.42	26.16	50.80	16.82	32.10
DISTRICT CENTER SUBTOTAL	1.19	2.23	0.0	0.0	1.16	2.46	3.84	4.98	2.14	3.72
TOTAL COST	295.68	251.03	335.97	334.40	196.38	114.41	250.38	214.62	255.94	205.80
LOW	86.17		99.51		73.42		114.05		73.42	
1ST QUARTILE	155.24		217.74		115.30		142.18		130.85	
2ND QUARTILE	234.90		335.97		133.15		179.96		180.93	
3RD QUARTILE	285.96		454.20		286.39		245.90		274.37	
HIGH	871.13		572.43		364.70		863.50		871.13	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	7		2		6		7		22	
CLASS INSTRUCTOR	75.88	20.92	60.27	12.27	47.95	16.52	53.96	16.90	59.87	20.41
TEACHER AIDE	8.26	7.42	24.41	34.52	3.03	4.39	3.80	4.33	6.88	10.94
READING SPECIALIST	12.35	24.99	0.0	0.0	6.61	11.76	0.0	0.0	5.73	15.50
OTHER STAFF	33.20	30.65	15.42	0.75	10.73	8.03	20.05	11.33	21.30	20.10
STAFF SUBTOTAL	129.77	53.56	100.10	46.05	68.32	12.51	77.80	19.13	93.78	42.05
FACILITIES SUBTOTAL	37.24	11.08	24.98	1.03	24.82	8.53	26.51	6.42	29.32	9.76
EQUIPMENT SUBTOTAL	3.71	5.24	2.77	0.17	2.41	1.05	1.96	1.94	2.71	3.12
MATERIALS SUBTOTAL	15.49	5.61	9.46	5.31	14.06	5.77	11.70	3.86	13.35	5.15
DISTRICT CENTER SUBTOTAL	0.45	0.79	0.0	0.0	1.10	2.69	4.25	4.86	1.79	3.42
TOTAL COST	186.65	65.15	137.31	52.56	110.72	15.51	122.23	22.82	140.96	51.24
LOW	118.97		100.15		97.28		96.72		96.72	
1ST QUARTILE	149.53		118.73		101.47		108.17		105.44	
2ND QUARTILE	160.50		137.31		105.75		120.47		122.13	
3RD QUARTILF	206.46		155.90		113.23		127.85		159.23	
HIGH	315.08		174.48		139.79		166.38		315.08	

Table E-10

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 2 FOR GRADE 2

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	7		2		7		10		26	
CLASS INSTRUCTOR	163.30	169.63	183.92	207.22	105.29	72.67	85.98	68.89	119.53	113.91
TEACHER AIDE	24.74	41.73	57.99	24.05	10.44	14.37	3.11	4.73	15.13	27.12
READING SPECIALIST	6.96	18.41	0.0	0.0	11.22	14.24	56.35	171.22	26.57	106.16
OTHER STAFF	24.93	21.73	15.42	0.75	11.81	11.44	27.82	33.83	21.78	24.60
STAFF SUBTOTAL	219.94	202.26	257.34	232.02	138.75	62.88	173.26	181.08	1[illegible]3.00	161.66
FACILITIES SUBTOTAL	70.72	72.23	82.13	83.82	50.74	31.12	44.23	41.75	56.03	50.71
EQUIPMENT SUBTOTAL	5.05	6.68	3.11	2.81	3.86	4.37	3.41	6.90	3.95	4.97
MATERIALS SUBTOTAL	9.88	3.18	8.55	5.69	12.03	6.20	27.59	53.19	17.17	33.21
DISTRICT CENTER SUBTOTAL	1.36	2.36	0.0	0.0	1.16	2.46	4.17	5.13	2.28	3.83
TOTAL COST	306.94	278.54	351.13	312.96	206.53	100.24	252.66	231.35	262.43	215.44
LOW	86.17		129.84		83.64		71.99		71.99	
1ST QUARTILE	158.48		240.48		137.60		120.21		129.97	
2ND QUARTILE	214.63		351.13		192.86		167.07		192.89	
3RD QUARTILE	316.16		461.78		264.38		252.34		265.40	
HIGH	898.51		572.43		365.29		858.03		898.51	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	5		2		5		4		16	
CLASS INSTRUCTOR	105.16	44.91	68.28	0.95	69.03	18.98	60.29	24.85	78.04	33.56
TEACHER AIDE	4.77	6.72	24.41	34.52	5.73	7.56	6.88	4.61	8.05	12.35
READING SPECIALIST	17.30	28.81	0.0	0.0	5.73	12.80	0.0	0.0	7.19	17.90
OTHER STAFF	29.99	36.74	15.42	0.75	8.96	6.66	16.59	11.82	18.25	21.82
STAFF SUBTOTAL	157.22	57.37	108.11	34.72	89.44	21.67	83.75	18.76	111.53	47.11
FACILITIES SUBTOTAL	51.69	18.43	27.32	2.20	37.55	12.16	27.66	10.27	38.22	16.05
EQUIPMENT SUBTOTAL	1.87	2.23	2.34	0.77	2.93	1.79	1.[illegible]1	1.52	2.22	1.72
MATERIALS SUBTOTAL	17.07	8.66	9.43	5.36	14.81	6.79	9.2[illegible]	2.67	13.45	6.90
DISTRICT CENTER SUBTOTAL	0.41	0.93	0.0	0.0	0.0	0.0	2.59	3.33	0.78	1.91
TOTAL COST	228.27	74.77	147.20	38.57	144.74	33.98	124.94	29.46	166.20	63.33
LOW	124.10		119.93		119.84		87.73		87.73	
1ST QUARTILE	207.28		133.57		122.00		108.31		121.48	
2ND QUARTILE	210.03		147.20		127.79		130.21		148.43	
3RD QUARTILE	284.85		160.84		153.47		146.84		202.25	
HIGH	315.08		174.48		200.57		151.61		315.08	

Table E-11

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 2 FOR GRADE 4

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	8		2		7		11		28	
CLASS INSTRUCTOR	147.07	164.13	175.66	218.91	101.03	75.30	101.13	59.23	119.55	109.56
TEACHER AIDE	19.21	25.42	53.11	38.96	1.94	2.71	4.37	8.13	11.48	20.48
READING SPECIALIST	14.39	27.07	0.0	0.0	7.13	12.39	51.23	163.33	26.02	102.69
OTHER STAFF	32.72	30.42	15.42	9.75	10.22	7.91	29.84	32.52	24.73	27.13
STAFF SUBTOTAL	213.39	177.35	244.19	250.62	120.32	68.65	186.56	161.90	181.78	151.13
FACILITIES SUBTOTAL	65.75	68.99	76.70	91.49	47.00	33.03	49.28	38.56	55.23	49.33
EQUIPMENT SUBTOTAL	4.66	5.29	3.63	2.09	3.49	4.14	4.90	7.09	4.39	5.50
MATERIALS SUBTOTAL	11.16	4.83	7.86	4.72	11.07	7.12	26.27	50.85	16.84	32.19
DISTRICT CENTER SUBTOTAL	1.19	2.23	0.0	0.0	1.16	2.46	3.84	4.98	2.14	3.72
TOTAL COST	295.65	248.29	332.38	339.48	183.84	110.91	270.85	289.14	240.38	203.80
LOW	86.17		92.33		81.44		120.85		81.44	
1ST QUARTILE	142.29		212.36		98.30		171.88		120.26	
2ND QUARTILE	241.35		332.38		118.52		205.30		219.16	
3RD QUARTILE	317.37		452.41		259.82		252.73		269.31	
HIGH	854.02		572.43		365.07		867.02		867.02	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		1		5		6		17	
CLASS INSTRUCTOR	70.62	36.74	47.68	0.0	46.61	8.22	65.95	27.69	60.56	26.60
TEACHER AIDE	8.28	10.32	0.0	0.0	2.54	2.86	5.06	4.98	4.38	6.31
READING SPECIALIST	4.01	8.96	0.0	0.0	0.0	0.0	0.0	0.0	1.18	4.86
OTHER STAFF	20.39	15.89	15.95	0.0	8.30	6.59	17.83	10.44	15.67	11.57
STAFF SUBTOTAL	101.30	33.03	63.63	0.0	57.44	14.21	88.84	31.64	81.79	31.30
FACILITIES SUBTOTAL	34.32	17.48	22.09	0.0	24.95	5.01	32.32	13.20	30.14	12.52
EQUIPMENT SUBTOTAL	1.95	1.59	4.37	0.0	2.77	1.32	1.34	0.92	2.12	1.42
MATERIALS SUBTOTAL	12.59	3.09	5.64	0.0	13.90	6.27	11.76	4.40	12.28	4.69
DISTRICT CENTER SUBTOTAL	0.60	0.92	0.0	0.0	0.0	0.0	2.82	3.32	1.17	2.30
TOTAL COST	150.77	48.90	95.73	0.0	99.06	20.94	137.08	44.14	127.49	42.85
LOW	95.84		95.73		63.17		90.80		63.17	
1ST QUARTILE	112.94		95.73		98.89		104.89		98.89	
2ND QUARTILE	148.82		95.73		107.04		124.56		111.12	
3RD QUARTILE	180.37		95.73		111.12		170.91		148.82	
HIGH	215.86		95.73		115.08		197.87		215.86	

Table E-12

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 2 FOR GRADE 6

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	3		2		7		6		18	
CLASS INSTRUCTOR	124.82	110.07	177.74	215.97	110.21	99.06	97.45	67.46	115.89	97.82
TEACHER AIDE	14.53	11.60	43.98	43.87	3.59	4.49	2.24	3.83	9.45	17.83
READING SPECIALIST	22.15	38.36	0.0	0.0	7.13	12.39	90.55	221.81	36.65	127.58
OTHER STAFF	50.91	41.92	15.42	0.75	9.91	7.59	33.29	42.78	25.15	31.79
STAFF SUBTOTAL	212.40	48.65	237.14	260.59	130.84	96.31	223.53	219.86	187.14	154.73
FACILITIES SUBTOTAL	55.20	51.47	77.34	90.59	53.31	44.72	51.94	41.35	55.85	45.45
EQUIPMENT SUBTOTAL	4.03	2.23	4.80	1.56	3.79	4.32	5.10	8.61	4.29	5.43
MATERIALS SUBTOTAL	13.37	5.01	7.14	3.69	11.32	6.15	40.10	68.15	20.79	39.79
DISTRICT CENTER SUBTOTAL	0.31	0.54	0.0	0.0	1.16	2.46	3.64	4.83	1.72	3.34
TOTAL COST	285.39	93.33	325.61	349.85	208.41	146.90	324.31	273.55	269.79	203.12
LOW	220.84		78.79		43.31		87.15		43.31	
1ST QUARTILE	231.89		202.20		99.41		214.23		104.23	
2ND QUARTILE	242.94		325.61		117.36		249.69		241.75	
3RD QUARTILE	317.67		449.02		313.33		282.10		345.70	
HIGH	392.40		572.43		416.74		864.03		864.03	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		1		6		5		17	
CLASS INSTRUCTOR	59.47	14.39	49.59	0.0	40.56	20.70	42.84	19.20	47.33	18.65
TEACHER AIDE	7.83	7.51	0.0	0.0	2.99	5.09	4.23	4.71	4.60	5.77
READING SPECIALIST	4.01	8.96	0.0	0.0	4.83	11.83	0.0	0.0	2.88	8.29
OTHER STAFF	21.09	17.20	15.95	0.0	10.74	8.03	18.93	13.31	16.50	12.62
STAFF SUBTOTAL	92.39	31.70	65.54	0.0	59.12	21.59	66.00	22.37	71.31	26.97
FACILITIES SUBTOTAL	26.89	6.27	24.5[illegible]	0.0	19.17	7.09	22.35	10.94	22.69	8.12
EQUIPMENT SUBTOTAL	3.95	6.28	1.38	0.0	1.84	0.70	2.78	2.29	2.71	3.49
MATERIALS SUBTOTAL	12.79	4.38	5.79	0.0	13.76	5.71	11.13	2.69	12.23	4.53
DISTRICT CENTER SUBTOTAL	0.62	0.90	0.0	0.0	1.10	2.69	3.25	5.57	1.53	3.41
TOTAL COST	130.64	45.04	97.30	0.0	94.98	20.37	105.51	33.52	110.47	35.22
LOW	94.76		97.30		69.17		53.14		53.14	
1ST QUARTILE	119.91		97.30		77.64		91.91		94.76	
2ND QUARTILE	125.95		97.30		101.36		118.70		108.90	
3RD QUARTILE	129.88		97.30		108.03		131.88		125.95	
HIGH	213.51		97.30		117.99		131.91		21[illegible]	

Table E-13

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 3 FOR ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	6		6		0		3		15	
CLASS INSTRUCTOR	254.90	237.98	161.17	80.68	0.0	0.0	202.53	143.12	206.94	166.08
TEACHER AIDE	13.03	26.85	10.49	12.79	0.0	0.0	17.64	30.56	12.94	21.37
READING SPECIALIST	9.08	22.25	6.26	9.96	0.0	0.0	7.52	13.03	7.64	15.43
OTHER STAFF	13.09	8.20	24.62	20.44	0.0	0.0	20.08	24.16	19.10	16.89
STAFF SUBTOTAL	290.10	223.57	202.54	70.22	0.0	0.0	247.78	76.61	246.61	140.64
FACILITIES SUBTOTAL	113.61	90.42	79.58	46.32	0.0	0.0	91.69	63.14	95.61	71.54
EQUIPMENT SUBTOTAL	12.29	10.45	3.12	2.98	0.0	0.0	9.73	5.14	8.11	8.04
MATERIALS SUBTOTAL	17.42	16.33	14.43	4.42	0.0	0.0	12.48	1.81	15.23	10.70
DISTRICT CENTER SUBTOTAL	4.57	9.88	1.48	3.63	0.0	0.0	4.60	6.83	3.34	6.98
TOTAL COST	437.99	341.31	301.15	112.74	0.0	0.0	366.27	147.85	368.91	230.83
LOW	204.83		157.71		0.0		199.91		157.71	
1ST QUARTILE	287.78		222.69		0.0		308.98		241.18	
2ND QUARTILE	332.04		305.19		0.0		416.[illegible]		32[illegible]3	
3RD QUARTILE	353.30		350.81		0.0		449.65		393.38	
HIGH	1125.60		466.94		0.0		482.05		1125.60	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	6		6		0		2		14	
CLASS INSTRUCTOR	66.85	23.69	64.89	13.59	0.0	0.0	76.33	23.87	67.37	18.60
TEACHER AIDE	0.78	1.92	2.56	2.97	0.0	0.0	0.0	0.0	1.43	2.43
READING SPECIALIST	10.17	24.91	5.35	9.20	0.0	0.0	0.0	0.0	6.65	16.87
OTHER STAFF	12.33	8.23	27.50	25.18	0.0	0.0	6.14	1.35	17.95	18.66
STAFF SUBTOTAL	90.13	34.67	100.31	32.16	0.0	0.0	82.47	25.22	93.40	30.89
FACILITIES SUBTOTAL	31.95	11.22	33.27	6.24	0.0	0.0	35.35	10.97	33.09	8.61
EQUIPMENT SUBTOTAL	1.86	0.67	4.86	3.94	0.0	0.0	3.96	1.60	3.44	2.93
MATERIALS SUBTOTAL	17.57	15.30	17.20	5.46	0.0	0.0	13.89	7.93	16.88	10.39
DISTRICT CENTER SUBTOTAL	4.57	9.88	1.48	3.63	0.0	0.0	6.89	7.85	3.50	7.10
TOTAL COST	146.08	45.63	157.12	27.20	0.0	0.0	142.57	53.57	150.31	36.67
LOW	86.74		113.11		0.0		104.69		86.74	
1ST QUARTILE	117.67		143.60		0.0		123.63		119.19	
2ND QUARTILE	140.41		164.11		0.0		142.57		152.46	
3RD QUARTILE	184.54		174.55		0.0		161.51		179.63	
HIGH	199.55		186.61		0.0		180.45		199.55	

Table E-14

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 3 FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	5		5		0		3		13	
CLASS INSTRUCTOR	274.16	261.18	139.86	81.38	0.0	0.0	128.05	150.93	188.79	183.57
TEACHER AIDE	28.52	56.49	9.71	14.22	0.0	0.0	20.29	35.14	19.38	37.56
READING SPECIALIST	12.20	27.28	7.51	10.59	0.0	0.0	7.52	13.03	9.32	17.87
OTHER STAFF	11.79	9.17	24.37	14.81	0.0	0.0	20.08	24.16	18.54	15.24
STAFF SUBTOTAL	326.67	241.89	181.45	72.62	0.0	0.0	175.95	131.71	236.03	172.39
FACILITIES SUBTOTAL	117.93	111.25	78.24	49.46	0.0	0.0	60.86	63.99	89.49	78.85
EQUIPMENT SUBTOTAL	10.34	10.96	3.75	2.92	0.0	0.0	7.49	5.93	7.15	7.60
MATERIALS SUBTOTAL	20.78	16.07	12.87	5.20	0.0	0.0	11.87	2.61	15.68	10.69
DISTRICT CENTER SUBTOTAL	5.48	10.76	1.78	3.97	0.0	0.0	4.60	6.83	3.85	7.39
TOTAL COST	481.19	369.12	278.08	114.10	0.0	0.0	260.77	201.77	352.20	260.78
LOW	193.41		164.59		0.0		88.27		88.27	
1ST QUARTILE	318.52		215.49		0.0		149.83		211.38	
2ND QUARTILE	355.37		245.48		0.0		211.38		297.88	
3RD QUARTILE	413.07		297.88		0.0		347.02		413.07	
HIGH	1125.60		466.94		0.0		482.65		1125.60	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		4		0		2		11	
CLASS INSTRUCTOR	48.81	20.04	83.36	42.62	0.0	0.0	80.86	25.89	67.20	32.92
TEACHER AIDE	0.28	0.63	1.67	2.22	0.0	0.0	0.0	0.0	0.74	1.48
READING SPECIALIST	12.20	27.29	3.79	7.58	0.0	0.0	0.0	0.0	6.93	18.51
OTHER STAFF	12.57	9.18	12.39	9.91	0.0	0.0	6.14	1.35	11.34	8.36
STAFF SUBTOTAL	73.87	36.97	101.21	54.79	0.0	0.0	87.00	27.24	86.20	41.08
FACILITIES SUBTOTAL	25.48	10.78	44.57	22.08	0.0	0.0	39.61	12.03	34.99	17.13
EQUIPMENT SUBTOTAL	2.24	2.88	7.63	6.21	0.0	0.0	4.49	3.05	4.61	4.72
MATERIALS SUBTOTAL	18.44	16.99	17.62	5.90	0.0	0.0	13.46	7.62	17.24	11.63
DISTRICT CENTER SUBTOTAL	4.92	11.81	2.22	4.44	0.0	0.0	6.89	7.85	4.30	7.99
TOTAL COST	124.95	41.25	173.25	69.77	0.0	0.0	151.46	57.78	147.33	54.75
LOW	92.69		101.61		0.0		110.60		92.69	
1ST QUARTILE	95.92		125.61		0.0		131.03		99.35	
2ND QUARTILE	97.08		166.63		0.0		151.46		133.61	
3RD QUARTILE	160.23		214.27		0.0		171.89		185.57	
HIGH	178.82		258.13		0.0		192.31		258.13	

Table E-17

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 4 FOR ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	4		5		9		18		36	
CLASS INSTRUCTOR	167.73	177.35	67.03	24.69	55.75	8.04	67.53	36.61	75.76	67.41
TEACHER AIDE	30.62	60.89	7.19	9.53	7.56	10.62	5.65	9.14	9.12	21.32
READING SPECIALIST	15.45	21.49	16.14	11.08	4.47	7.76	20.71	53.31	19.43	39.43
OTHER STAFF	21.95	15.70	9.50	4.52	16.09	23.02	15.19	12.13	15.50	15.33
STAFF SUBTOTAL	235.75	195.25	100.66	20.08	84.60	35.46	117.08	64.53	119.88	86.79
FACILITIES SUBTOTAL	82.26	88.00	31.49	12.73	25.68	5.62	32.70	15.09	36.26	33.04
EQUIPMENT SUBTOTAL	5.17	9.25	2.55	1.29	2.99	2.27	3.10	2.45	3.27	3.48
MATERIALS SUBTOTAL	19.57	10.30	12.90	3.35	10.97	4.08	15.81	4.12	12.12	5.65
DISTRICT CENTER SUBTOTAL	1.87	2.16	2.75	6.14	9.24	10.11	4.11	7.31	4.95	7.80
TOTAL COST	344.62	288.11	150.36	35.63	133.48	43.21	167.87	74.37	176.48	119.23
LOW	92.70		108.50		93.01		80.67		80.67	
1ST QUARTILE	107.18		116.43		99.30		104.17		101.36	
2ND QUARTILE	307.52		166.45		123.11		164.37		153.68	
3RD QUARTILE	544.96		172.09		159.24		201.47		191.03	
HIGH	670.74		188.41		220.08		330.72		670.74	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	3		4		8		11		26	
CLASS INSTRUCTOR	46.69	6.70	50.19	14.29	48.89	15.20	51.02	13.40	49.40	12.93
TEACHER AIDE	1.11	1.21	7.15	10.01	11.50	15.56	4.03	4.04	6.49	10.19
READING SPECIALIST	6.56	7.37	16.91	7.16	0.61	1.73	10.42	11.06	7.96	9.66
OTHER STAFF	16.50	13.31	8.62	3.55	11.11	10.18	14.62	11.04	12.04	10.01
STAFF SUBTOTAL	70.86	12.04	82.87	26.25	71.39	30.79	80.09	25.98	76.78	25.57
FACILITIES SUBTOTAL	21.80	4.42	26.24	5.02	23.60	7.32	23.70	6.03	23.89	6.06
EQUIPMENT SUBTOTAL	1.30	1.79	1.88	0.75	3.18	3.62	2.00	0.82	2.28	2.17
MATERIALS SUBTOTAL	19.47	11.51	11.84	3.31	11.20	5.25	10.85	2.42	12.11	5.42
DISTRICT CENTER SUBTOTAL	1.27	2.21	3.43	6.86	8.09	10.16	4.66	6.41	4.88	7.54
TOTAL COST	114.87	27.02	126.27	37.50	117.47	44.98	120.79	34.98	119.93	35.95
LOW	83.85		78.14		72.40		53.68		53.68	
1ST QUARTILE	105.68		107.49		85.94		110.65		89.31	
2ND QUARTILE	127.51		131.18		102.62		121.69		119.77	
3RD QUARTILE	130.38		149.96		137.47		132.23		138.44	
HIGH	133.76		164.59		203.79		188.30		203.79	

Table E-18

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 4 FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	3		4		7		14		28	
CLASS INSTRUCTOR	274.75	295.97	61.56	24.22	58.35	7.40	67.50	33.20	86.57	107.33
TEACHER AIDE	41.58	71.87	5.27	2.77	7.38	11.73	12.04	27.03	13.06	29.56
READING SPECIALIST	15.38	24.63	35.62	14.30	5.86	10.44	36.56	63.09	26.48	46.96
OTHER STAFF	24.20	10.20	9.50	3.40	20.46	26.26	15.27	13.00	16.71	16.23
STAFF SUBTOTAL	355.90	275.60	111.94	36.10	92.03	37.69	131.38	73.02	142.02	120.97
FACILITIES SUBTOTAL	125.68	119.83	30.75	15.47	26.94	4.32	32.38	13.95	40.78	45.72
EQUIPMENT SUBTOTAL	7.22	11.04	1.91	0.53	2.89	1.68	3.16	2.91	3.35	3.98
MATERIALS SUBTOTAL	21.86	10.56	13.21	3.78	10.47	4.69	11.04	4.07	12.37	5.89
DISTRICT CENTER SUBTOTAL	2.49	2.16	3.43	6.86	11.05	10.78	4.35	8.15	5.70	8.58
TOTAL COST	513.15	397.80	161.24	56.90	143.37	45.72	182.32	80.51	205.02	166.59
LOW	110.38		105.21		85.48		79.69		79.69	
1ST QUARTILE	312.76		118.14		110.05		120.29		117.19	
2ND QUARTILE	507.15		157.11		147.18		161.15		145.56	
3RD QUARTILE	710.53		200.21		165.30		244.11		221.45	
HIGH	913.92		225.55		220.08		330.94		913.92	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	2		4		3		5		14	
CLASS INSTRUCTOR	54.84	39.60	56.39	21.63	39.74	33.52	59.37	19.90	53.66	24.15
TEACHER AIDE	1.07	1.25	5.05	7.98	18.71	19.80	3.00	4.14	6.68	11.16
READING SPECIALIST	2.57	3.63	35.62	14.29	1.63	7.02	7.20	12.69	13.46	17.77
OTHER STAFF	22.19	13.68	9.63	3.46	8.26	6.47	13.75	10.40	12.60	8.07
STAFF SUBTOTAL	80.67	40.40	106.69	34.77	68.34	55.14	83.32	30.16	86.41	39.24
FACILITIES SUBTOTAL	26.83	12.96	31.95	14.10	20.89	16.20	26.80	10.18	27.01	12.15
EQUIPMENT SUBTOTAL	2.05	3.37	2.17	1.03	6.26	4.73	2.00	0.52	3.11	2.76
MATERIALS SUBTOTAL	25.05	6.86	13.62	4.75	17.66	2.09	9.34	0.90	14.70	6.55
DISTRICT CENTER SUBTOTAL	1.91	2.70	3.43	6.86	15.90	13.23	5.40	8.76	6.62	9.43
TOTAL COST	138.11	60.57	157.86	59.60	129.04	75.38	127.03	54.13	137.85	55.35
LOW	95.20		113.74		53.04		69.65		53.04	
1ST QUARTILE	116.70		117.47		91.66		91.99		99.90	
2ND QUARTILE	138.11		137.57		130.29		118.17		124.50	
3RD QUARTILE	159.53		177.96		167.04		146.10		174.82	
HIGH	180.94		242.56		203.79		209.25		242.56	

Table E-15

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 3 FOR GRADE 4

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	6		6		0		3		15	
CLASS INSTRUCTOR	241.44	247.85	164.71	93.29	0.0	0.0	427.79	466.45	248.02	257.00
TEACHER AIDE	6.75	14.01	13.31	13.41	0.0	0.0	9.30	16.11	9.80	13.44
READING SPECIALIST	10.17	24.91	6.26	9.96	0.0	0.0	7.52	13.03	8.07	16.07
OTHER STAFF	12.79	8.17	27.41	25.08	0.0	0.0	20.09	24.16	20.10	19.43
STAFF SUBTOTAL	271.15	230.11	211.69	73.42	0.0	0.0	464.70	428.64	286.08	237.46
FACILITIES SUBTOTAL	108.74	103.18	78.52	47.63	0.0	0.0	104.83	198.92	111.87	109.02
EQUIPMENT SUBTOTAL	12.00	10.74	3.05	2.86	0.0	0.0	15.51	12.09	9.12	9.79
MATERIALS SUBTOTAL	17.11	16.53	14.13	6.43	0.0	0.0	14.27	2.37	15.35	16.74
DISTRICT CENTER SUBTOTAL	4.57	9.88	1.48	3.63	0.0	0.0	4.60	6.84	3.34	[illegible].98
TOTAL COST	413.57	354.22	308.87	117.32	0.0	0.0	683.91	639.86	425.76	358.35
LOW	194.55		152.55		0.0		168.84		152.55	
1ST QUARTILE	226.77		225.86		0.0		325.77		202.20	
2ND QUARTILE	298.03		336.43		0.0		482.71		332.41	
3RD QUARTILE	346.16		363.00		0.0		941.45		418.72	
HIGH	1125.59		466.94		0.0		1400.19		1400.19	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	4		5		0		2		11	
CLASS INSTRUCTOR	68.09	31.92	45.57	9.56	0.0	0.0	63.61	10.78	57.04	21.85
TEACHER AIDE	0.0	0.0	2.66	3.03	0.0	0.0	0.0	0.0	1.21	2.37
READING SPECIALIST	0.0	0.0	7.51	10.59	0.0	0.0	0.0	0.0	3.41	7.76
OTHER STAFF	13.19	19.48	19.69	19.45	0.0	0.0	6.14	1.35	14.87	14.04
STAFF SUBTOTAL	81.29	24.52	75.43	22.92	0.0	0.0	69.75	12.13	76.53	20.59
FACILITIES SUBTOTAL	35.09	15.58	26.42	5.15	0.0	0.0	29.09	7.63	30.06	10.31
EQUIPMENT SUBTOTAL	1.03	0.68	4.66	3.01	0.0	0.0	3.56	0.21	3.13	2.59
MATERIALS SUBTOTAL	20.42	18.57	17.39	5.54	0.0	0.0	12.33	5.40	17.57	11.29
DISTRICT CENTER SUBTOTAL	6.15	12.30	1.78	3.97	0.0	0.0	6.8[illegible]	7.85	4.30	7.99
TOTAL COST	143.98	55.68	125.67	22.64	0.0	0.0	121.60	33.23	131.59	36.66
LOW	79.35		97.89		0.0		98.11		79.35	
1ST QUARTILE	108.25		116.97		0.0		109.86		107.54	
2ND QUARTILE	147.22		120.78		0.0		121.60		120.78	
3RD QUARTILE	182.95		133.67		0.0		133.35		152.08	
HIGH	202.12		159.05		0.0		145.10		202.12	

Table E-16

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 3 FOR GRADE 6

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	5		3		0		2		10	
CLASS INSTRUCTOR	413.92	282.53	116.14	92.07	0.0	0.0	169.77	187.47	275.76	250.72
TEACHER AIDE	55.22	105.41	24.40	9.09	0.0	0.0	37.20	52.61	42.37	73.96
READING SPECIALIST	0.0	0.0	7.46	12.92	0.0	0.0	11.28	15.95	4.49	9.47
OTHER STAFF	16.47	12.94	43.37	25.00	0.0	0.0	27.53	28.89	26.75	21.59
STAFF SUBTOTAL	485.62	354.09	191.37	74.05	0.0	0.0	245.78	90.01	349.38	280.82
FACILITIES SUBTOTAL	176.20	106.53	56.94	41.25	0.0	0.0	77.86	80.34	120.75	98.05
EQUIPMENT SUBTOTAL	15.22	14.37	5.62	1.72	0.0	0.0	10.32	5.66	11.36	8.46
MATERIALS SUBTOTAL	22.20	15.10	15.63	2.23	0.0	0.0	13.21	2.02	18.41	10.93
DISTRICT CENTER SUBTOTAL	5.48	10.76	0.0	0.0	0.0	0.0	6.22	8.80	3.98	8.23
TOTAL COST	704.71	459.64	269.56	115.86	0.0	0.0	353.39	182.79	503.90	382.56
LOW	318.52		135.85		0.0		224.14		135.85	
1ST QUARTILE	357.56		234.11		0.0		288.77		321.98	
2ND QUARTILE	442.93		332.30		0.0		353.39		348.99	
3RD QUARTILE	1125.69		336.41		0.0		418.02		472.72	
HIGH	1278.87		340.46		0.0		482.65		1278.87	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	5		4		0		1		10	
CLASS INSTRUCTOR	79.68	30.25	61.86	8.75	0.0	0.0	107.98	0.0	75.38	25.33
TEACHER AIDE	1.75	3.91	4.50	3.66	0.0	0.0	0.0	0.0	2.67	3.74
READING SPECIALIST	12.20	27.29	5.59	11.19	0.0	0.0	0.0	0.0	8.34	19.80
OTHER STAFF	11.92	9.13	35.39	26.84	0.0	0.0	7.10	0.0	20.83	20.89
STAFF SUBTOTAL	105.56	42.83	107.35	35.21	0.0	0.0	115.08	0.0	107.22	35.17
FACILITIES SUBTOTAL	36.44	12.59	28.14	6.10	0.0	0.0	47.13	0.0	34.19	10.98
EQUIPMENT SUBTOTAL	1.91	0.94	4.22	3.90	0.0	0.0	5.28	0.0	3.17	2.71
MATERIALS SUBTOTAL	19.78	15.77	14.87	6.24	0.0	0.0	22.75	0.0	18.07	11.49
DISTRICT CENTER SUBTOTAL	5.48	10.76	2.22	4.44	0.0	0.0	12.44	0.0	4.87	8.23
TOTAL COST	169.09	50.62	156.79	40.78	0.0	0.0	202.60	0.0	167.53	43.39
LOW	120.40		106.01		0.0		202.60		106.01	
1ST QUARTILE	134.86		134.72		0.0		202.60		136.39	
2ND QUARTILE	143.40		160.73		0.0		202.60		160.73	
3RD QUARTILE	222.41		182.80		0.0		202.60		201.93	
HIGH	225.20		199.69		0.0		202.60		225.20	

Table E-19

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 4 FOR GRADE 4

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	3		4		6		14		27	
CLASS INSTRUCTOR	199.95	100.01	56.50	30.27	57.62	14.08	52.89	15.61	70.81	70.64
TEACHER AIDE	40.24	69.70	10.61	16.35	6.30	7.60	3.06	5.31	9.03	23.74
READING SPECIALIST	15.30	26.63	10.69	12.35	0.81	2.00	28.80	59.70	18.41	44.72
OTHER STAFF	29.01	15.79	7.26	2.99	8.29	5.64	15.26	12.28	14.05	11.96
STAFF SUBTOTAL	284.50	186.72	85.05	26.16	73.03	20.23	100.01	61.74	112.31	93.39
FACILITIES SUBTOTAL	124.78	120.26	25.39	14.64	26.62	8.64	24.50	6.36	36.24	46.00
EQUIPMENT SUBTOTAL	6.57	10.57	1.96	0.86	3.10	2.03	2.29	1.20	2.90	3.59
MATERIALS SUBTOTAL	23.06	9.03	11.51	2.73	12.21	5.50	11.13	4.54	12.75	6.20
DISTRICT CENTER SUBTOTAL	2.49	2.16	3.43	6.86	9.24	11.30	4.63	8.06	5.24	8.27
TOTAL COST	441.40	296.35	127.35	30.20	124.20	34.49	142.56	62.63	169.44	137.07
LOW	110.30		100.54		82.33		59.86		59.86	
1ST QUARTILE	311.90		104.49		104.70		111.00		106.74	
2ND QUARTILE	505.43		112.75		115.40		143.20		123.11	
3RD QUARTILE	603.03		135.61		144.47		160.50		163.94	
HIGH	700.64		183.34		176.60		302.91		700.64	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	1		4		4		8		17	
CLASS INSTRUCTOR	23.88	0.0	61.19	11.53	46.44	12.20	45.93	23.24	48.35	19.20
TEACHER AIDE	1.54	0.0	9.87	16.03	9.20	14.27	4.65	7.53	6.77	11.13
READING SPECIALIST	0.0	0.0	10.69	12.35	0.0	0.0	8.97	12.23	6.74	10.70
OTHER STAFF	30.73	0.0	7.59	2.29	15.45	14.91	13.95	9.98	13.79	10.70
STAFF SUBTOTAL	56.16	0.0	89.34	14.64	71.10	22.57	73.51	32.09	75.64	26.21
FACILITIES SUBTOTAL	12.82	0.0	30.75	8.84	25.28	4.72	20.83	9.52	23.36	9.25
EQUIPMENT SUBTOTAL	1.93	0.0	2.02	1.30	1.22	0.99	2.23	1.45	1.92	1.26
MATERIALS SUBTOTAL	18.48	0.0	12.04	3.01	8.60	3.14	11.07	2.97	11.53	3.56
DISTRICT CENTER SUBTOTAL	3.82	0.0	3.43	6.86	5.21	5.73	4.45	7.23	4.35	6.19
TOTAL COST	93.21	0.0	137.58	22.52	111.41	25.93	112.09	47.07	116.81	36.77
LOW	93.21		107.24		82.03		32.61		32.61	
1ST QUARTILE	93.21		129.95		101.94		81.65		93.21	
2ND QUARTILE	93.21		140.96		109.19		121.70		121.21	
3RD QUARTILE	93.21		148.59		118.66		134.73		144.40	
HIGH	93.21		161.14		145.23		185.61		185.61	

Table E-[illegible]

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 4 FOR GRADE 6

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	4		4		4		13		25	
CLASS INSTRUCTOR	65.93	64.02	68.28	19.42	43.72	10.84	67.53	43.80	63.58	40.19
TEACHER AIDE	30.76	59.90	6.91	10.60	4.53	8.13	1.95	4.25	7.77	24.20
READING SPECIALIST	16.45	20.60	5.42	10.84	0.0	0.0	14.83	22.77	11.21	19.12
OTHER STAFF	23.13	17.47	8.22	5.74	7.17	5.70	16.81	12.24	14.90	12.33
STAFF SUBTOTAL	136.27	155.89	88.83	17.20	55.42	14.02	101.12	54.50	97.47	71.76
FACILITIES SUBTOTAL	33.95	34.77	28.49	8.90	19.74	5.31	33.88	10.80	30.35	19.15
EQUIPMENT SUBTOTAL	5.01	8.93	2.92	2.21	2.38	1.20	3.73	3.50	3.59	4.23
MATERIALS SUBTOTAL	19.22	9.17	12.83	4.41	10.86	4.07	11.00	4.01	13.00	5.00
DISTRICT CENTER SUBTOTAL	1.87	2.16	3.43	6.86	12.26	13.22	5.18	8.37	5.50	8.60
TOTAL COST	196.32	200.55	136.50	26.52	100.66	27.16	154.92	75.69	149.91	94.23
LOW	86.20		107.77		75.04		58.21		58.21	
1ST QUARTILE	89.37		126.35		85.59		100.86		99.84	
2ND QUARTILE	101.22		133.10		94.61		166.40		112.01	
3RD QUARTILE	208.17		143.25		109.60		179.05		171.33	
HIGH	496.67		172.00		130.30		330.72		496.67	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	2		4		6		10		22	
CLASS INSTRUCTOR	63.43	34.60	39.40	21.92	54.57	19.73	51.62	17.10	51.27	19.72
TEACHER AIDE	1.56	2.21	8.10	8.74	6.00	11.94	3.17	3.56	4.69	7.43
READING SPECIALIST	9.83	6.64	5.42	10.84	0.0	0.0	10.40	11.66	6.61	9.89
OTHER STAFF	9.40	5.66	8.59	8.30	9.73	7.99	14.86	11.90	11.83	9.77
STAFF SUBTOTAL	84.23	35.83	61.51	32.75	70.30	36.22	80.04	24.96	74.40	29.23
FACILITIES SUBTOTAL	27.26	14.64	19.55	10.47	24.32	8.00	23.95	6.96	23.55	8.15
EQUIPMENT SUBTOTAL	0.43	0.37	2.05	2.45	1.63	0.73	2.13	1.09	1.82	1.32
MATERIALS SUBTOTAL	19.55	16.49	10.64	3.12	8.19	1.75	10.77	2.31	10.84	5.16
DISTRICT CENTER SUBTOTAL	0.0	0.0	3.43	6.86	4.67	5.05	4.07	6.75	3.75	5.03
TOTAL COST	131.46	67.33	97.18	44.60	109.11	47.89	120.96	31.58	114.36	39.83
LOW	83.05		30.46		72.40		73.50		30.46	
1ST QUARTILE	107.66		96.44		82.82		101.41		87.47	
2ND QUARTILE	131.46		117.26		88.83		115.79		112.00	
3RD QUARTILE	155.27		119.99		114.74		148.92		129.60	
HIGH	179.87		123.73		200.30		164.32		200.30	

Table E-21

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 5 FOR ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	1		1		4		8		14	
CLASS INSTRUCTOR	98.07	0.0	64.69	0.0	97.07	70.66	230.01	254.93	174.79	204.82
TEACHER AIDE	36.19	0.0	5.53	0.0	4.10	6.99	5.14	6.36	7.09	10.17
READING SPECIALIST	41.06	0.0	0.0	0.0	4.44	8.88	9.56	19.45	9.67	17.70
OTHER STAFF	4.84	0.0	12.60	0.0	23.40	20.17	31.87	30.82	26.14	26.02
STAFF SUBTOTAL	172.17	0.0	82.82	0.0	129.01	59.31	284.58	245.84	217.69	200.22
FACILITIES SUBTOTAL	39.40	0.0	29.56	0.0	45.98	34.91	125.29	146.30	89.64	116.82
EQUIPMENT SUBTOTAL	4.58	0.0	6.14	0.0	4.34	3.50	3.91	4.36	4.24	3.66
MATERIALS SUBTOTAL	8.19	0.0	11.31	0.0	16.30	5.42	40.13	65.26	28.98	49.83
DISTRICT CENTER SUBTOTAL	4.48	0.0	0.0	0.0	[illegible]	2.89	1.58	3.38	2.80	3.47
TOTAL COST	228.82	0.0	129.83	0.0	201.15	96.38	455.49	[illegible]	343.37	325.55
LOW	228.82		129.83		123.34		139.51		123.34	
1ST QUARTILE	228.82		129.83		127.83		257.59		160.56	
2ND QUARTILE	228.82		129.83		174.52		341.35		248.39	
3RD QUARTILE	228.82		129.83		249.83		462.48		391.92	
HIGH	228.82		129.83		328.22		1396.59		1396.59	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	0		1		3		5		9	
CLASS INSTRUCTOR	0.0	0.0	105.38	0.0	94.63	44.95	104.39	67.91	101.25	53.25
TEACHER AIDE	0.0	0.0	0.0	0.0	10.52	18.23	0.00	1.97	4.00	[illegible]
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	1.36	3.05	0.76	2.27
OTHER STAFF	0.0	0.0	18.43	0.0	25.13	24.17	35.36	36.31	30.07	29.14
STAFF SUBTOTAL	0.0	0.0	123.81	0.0	130.28	87.07	141.99	[illegible]	136.07	57.85
FACILITIES SUBTOTAL	0.0	0.0	59.62	0.0	38.18	14.76	56.10	40.17	50.52	30.79
EQUIPMENT SUBTOTAL	0.0	0.0	2.13	0.0	3.76	4.39	1.08	1.09	2.09	2.66
MATERIALS SUBTOTAL	0.0	0.0	14.52	0.0	15.31	11.70	48.53	84.06	33.68	62.27
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	5.16	3.43	0.64	1.42	2.07	3.06
TOTAL COST	0.0	0.0	200.08	0.0	192.69	118.55	248.34	168.97	224.43	136.38
LOW	0.0		200.08		108.33		137.04		108.33	
1ST QUARTILE	0.0		200.08		124.92		151.68		141.50	
2ND QUARTILE	0.0		200.08		141.50		199.92		199.92	
3RD QUARTILE	0.0		200.08		234.86		207.32		207.32	
HIGH	0.0		200.08		328.23		545.74		545.74	

Table E-22

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 5 FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	1		1		4		7		13	
CLASS INSTRUCTOR	88.11	0.0	52.12	0.0	56.99	23.00	234.96	277.22	154.84	216.20
TEACHER AIDE	21.66	0.0	5.54	0.0	4.72	[illegible]	5.87	6.49	6.71	7.29
READING SPECIALIST	15.49	0.0	0.0	0.0	4.44	8.88	10.93	20.59	8.46	[illegible]
OTHER STAFF	4.84	0.0	12.66	0.0	12.10	[illegible]	35.42	38.03	24.14	[illegible]
STAFF SUBTOTAL	130.31	0.0	70.25	0.0	78.26	16.77	287.18	266.43	194.14	216.12
FACILITIES SUBTOTAL	37.71	0.0	26.93	0.0	29.56	16.14	123.58	157.75	80.61	121.85
EQUIPMENT SUBTOTAL	[illegible]	0.0	[illegible]	0.0	4.31	3.53	3.91	4.28	4.16	3.58
MATERIALS SUBTOTAL	7.27	0.0	11.08	0.0	12.63	5.28	17.48	13.56	14.71	10.52
DISTRICT CENTER SUBTOTAL	4.48	0.0	0.0	0.0	5.52	2.89	1.81	3.58	3.02	3.52
TOTAL COST	182.89	0.0	114.62	0.0	130.28	23.19	433.96	436.51	296.64	345.64
LOW	182.89		114.62		107.40		139.51		107.40	
1ST QUARTILE	182.89		114.62		118.45		232.43		129.33	
2ND QUARTILE	182.89		114.62		125.73		254.27		182.85	
3RD QUARTILE	182.89		114.62		137.56		391.24		254.27	
HIGH	182.89		114.62		162.25		1396.59		1396.59	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	0		1		2		4		7	
CLASS INSTRUCTOR	0.0	0.0	105.38	0.0	132.63	38.03	107.12	79.29	114.16	59.53
TEACHER AIDE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER STAFF	0.0	0.0	18.43	0.0	6.13	8.59	21.05	19.58	16.42	15.56
STAFF SUBTOTAL	0.0	0.0	123.81	0.0	138.76	38.62	128.18	68.77	130.58	51.45
FACILITIES SUBTOTAL	0.0	0.0	59.62	0.0	52.36	10.06	58.48	46.73	56.90	33.44
EQUIPMENT SUBTOTAL	0.0	0.0	2.13	0.0	1.98	1.50	[illegible]	2.33	1.92	1.76
MATERIALS SUBTOTAL	0.0	0.0	14.52	0.0	8.65	6.26	[illegible]	92.93	38.51	70.78
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	4.12	4.14	0.0	0.0	1.18	2.63
TOTAL COST	0.0	0.0	200.08	0.0	205.88	48.05	247.93	202.86	229.08	146.69
LOW	0.0		200.08		171.91		114.43		114.43	
1ST QUARTILE	0.0		200.08		188.90		121.79		148.08	
2ND QUARTILE	0.0		200.08		205.88		165.78		200.08	
3RD QUARTILE	0.0		200.08		222.87		291.92		223.59	
HIGH	0.0		200.08		239.86		545.74		545.74	

Table E-23

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 5 FOR GRADE 4

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	1		1		3		5		10	
CLASS INSTRUCTOR	102.54	0.0	80.69	0.0	200.98	187.00	183.44	99.21	170.34	118.14
TEACHER AIDE	33.72	0.0	5.53	0.0	0.0	0.0	4.16	7.09	6.00	11.03
READING SPECIALIST	55.92	0.0	0.0	0.0	0.0	0.0	1.36	3.05	6.27	17.57
OTHER STAFF	4.84	0.0	12.60	0.0	36.70	40.63	31.53	38.63	28.52	33.88
STAFF SUBTOTAL	197.03	0.0	98.82	0.0	237.68	181.41	220.49	76.03	211.13	107.65
FACILITIES SUBTOTAL	45.16	0.0	32.96	0.0	89.28	78.81	92.08	50.09	80.63	54.65
EQUIPMENT SUBTOTAL	7.33	0.0	[illegible]	0.0	4.47	4.46	3.36	3.84	4.34	3.57
MATERIALS SUBTOTAL	8.70	0.0	11.59	0.0	24.66	10.04	52.40	82.29	35.63	58.08
DISTRICT CENTER SUBTOTAL	4.48	0.0	0.0	0.0	5.16	3.43	0.64	1.42	2.31	2.98
TOTAL COST	262.71	0.0	149.19	0.0	361.25	270.02	368.95	127.79	334.04	169.55
LOW	262.71		149.19		123.34		183.77		123.34	
1ST QUARTILE	262.71		149.19		214.51		286.62		203.50	
2ND QUARTILE	262.71		149.19		305.68		443.41		296.15	
3RD QUARTILE	262.71		149.19		480.21		459.64		455.58	
HIGH	262.71		149.19		654.73		471.33		654.73	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	0		0		2		3		5	
CLASS INSTRUCTOR	0.0	0.0	0.0	0.0	101.03	63.40	80.70	21.85	88.83	36.98
TEACHER AIDE	0.0	0.0	0.0	0.0	23.45	33.16	1.47	2.55	10.26	20.57
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	2.27	3.93	1.36	3.05
OTHER STAFF	0.0	0.0	0.0	0.0	30.00	14.76	46.07	42.84	39.54	32.40
STAFF SUBTOTAL	0.0	0.0	0.0	0.0	154.48	[illegible]	130.51	29.45	140.09	60.87
FACILITIES SUBTOTAL	0.0	0.0	0.0	0.0	43.08	15.97	37.92	11.11	39.99	11.55
EQUIPMENT SUBTOTAL	0.0	0.0	0.0	0.0	4.98	5.42	0.89	1.12	2.53	3.61
MATERIALS SUBTOTAL	0.0	0.0	0.0	0.0	16.07	16.95	9.51	4.51	12.14	9.74
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	7.13	0.12	1.06	1.84	3.49	3.57
TOTAL COST	0.0	0.0	0.0	0.0	225.75	149.80	179.90	18.16	198.24	80.04
LOW	0.0		0.0		119.83		164.76		119.83	
1ST QUARTILE	0.0		0.0		172.79		169.83		164.76	
2ND QUARTILE	0.0		0.0		225.75		174.90		174.90	
3RD QUARTILE	0.0		0.0		278.72		187.47		200.03	
HIGH	0.0		0.0		331.68		200.03		331.68	

Table E-24

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVEFAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 5 FOR GRADE 6

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	1		0		3		1		5	
CLASS INSTRUCTOR	84.40	0.0	0.0	0.0	228.62	210.96	102.19	0.0	174.49	166.69
TEACHER AIDE	51.32	0.0	0.0	0.0	0.0	0.0	4.41	0.0	11.15	22.54
READING SPECIALIST	55.92	0.0	0.0	0.0	0.0	0.0	6.81	0.0	12.55	24.42
OTHER STAFF	4.84	0.0	0.0	0.0	35.25	40.16	92.85	0.0	40.69	42.78
STAFF SUBTOTAL	196.48	0.0	0.0	0.0	263.87	202.33	206.26	0.0	238.87	147.15
FACILITIES SUBTOTAL	37.52	0.0	0.0	0.0	100.68	88.06	38.10	0.0	75.53	71.16
EQUIPMENT SUBTOTAL	4.27	0.0	0.0	0.0	4.60	4.07	0.78	0.0	3.77	3.33
MATERIALS SUBTOTAL	8.74	0.0	0.0	0.0	26.17	11.37	6.50	0.0	18.75	12.98
DISTRICT CENTER SUBTOTAL	4.48	0.0	0.0	0.0	5.16	3.43	3.18	0.0	4.63	2.57
TOTAL COST	251.50	0.0	0.0	0.0	400.48	309.64	254.82	0.0	341.55	227.39
LOW	251.50		0.0		164.62		254.82		164.62	
1ST QUARTILE	251.50		0.0		231.21		254.82		251.50	
2ND QUARTILE	251.50		0.0		297.80		254.82		254.82	
3RD QUARTILE	251.50		0.0		518.41		254.82		297.80	
HIGH	251.50		0.0		739.01		254.82		739.01	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	0		0		3		2		5	
CLASS INSTRUCTOR	0.0	0.0	0.0	0.0	81.97	55.56	69.24	21.26	76.88	41.29
TEACHER AIDE	0.0	0.0	0.0	0.0	0.0	0.0	2.20	3.12	0.88	1.97
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	3.40	4.82	1.36	3.05
OTHER STAFF	0.0	0.0	0.0	0.0	34.19	37.48	50.81	59.47	40.84	40.86
STAFF SUBTOTAL	0.0	0.0	0.0	0.0	116.16	92.94	125.66	46.15	119.96	69.85
FACILITIES SUBTOTAL	0.0	0.0	0.0	0.0	32.58	19.24	36.63	7.30	34.20	14.26
EQUIPMENT SUBTOTAL	0.0	0.0	0.0	0.0	3.63	4.49	2.52	2.66	3.19	3.50
MATERIALS SUBTOTAL	0.0	0.0	0.0	0.0	15.71	11.15	10.71	6.35	13.71	8.93
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	5.16	3.43	1.59	2.25	3.73	3.31
TOTAL COST	0.0	0.0	0.0	0.0	173.25	128.96	177.11	32.09	174.79	92.61
LOW	0.0		0.0		84.12		154.42		84.12	
1ST QUARTILE	0.0		0.0		99.31		165.76		114.50	
2ND QUARTILE	0.0		0.0		114.50		177.11		154.42	
3RD QUARTILE	0.0		0.0		217.81		188.45		199.80	
HIGH	0.0		0.0		321.12		199.80		321.12	

Table E-25

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 6 FOR ALL GRADES

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	4		2		4		8		18	
CLASS INSTRUCTOR	103.82	69.09	159.98	107.56	49.86	16.50	54.30	27.88	76.06	57.32
TEACHER AIDE	16.81	15.31	18.17	1.90	1.25	1.59	2.44	1.85	7.12	9.92
READING SPECIALIST	22.88	27.68	0.0	0.0	15.51	16.44	23.17	32.79	18.83	26.11
OTHER STAFF	38.40	41.68	71.91	67.54	10.25	5.15	23.28	15.34	29.15	31.81
STAFF SUBTOTAL	181.91	100.67	250.07	173.21	76.87	30.86	103.20	60.88	131.16	94.20
FACILITIES SUBTOTAL	49.30	37.20	71.41	41.05	24.09	6.02	27.60	12.52	36.51	25.95
EQUIPMENT SUBTOTAL	3.27	2.19	3.26	1.38	1.80	0.52	3.98	3.82	3.26	2.78
MATERIALS SUBTOTAL	7.89	5.07	14.87	2.96	9.72	4.78	12.64	6.40	11.18	5.62
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.32	0.45	0.15	0.29	2.12	3.81	1.01	2.66
TOTAL COST	242.36	151.34	339.93	210.27	112.62	35.10	149.54	77.17	183.12	121.37
LOW	139.95		191.24		72.83		85.45		72.83	
1ST QUARTILE	143.25		265.59		91.21		100.28		103.86	
2ND QUARTILE	183.74		339.93		111.86		122.97		140.50	
3RD QUARTILE	282.86		414.27		133.27		159.90		210.13	
HIGH	462.00		488.61		153.95		310.60		488.61	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	3		1		4		6		14	
CLASS INSTRUCTOR	52.58	4.57	105.03	0.0	69.62	15.40	66.41	40.42	67.10	29.14
TEACHER AIDE	12.36	12.06	6.94	0.0	0.82	0.95	7.12	6.16	6.43	7.43
READING SPECIALIST	30.50	28.18	55.19	0.0	20.09	25.10	37.10	34.10	32.12	28.50
OTHER STAFF	46.30	45.79	119.63	0.0	9.69	5.29	28.46	15.76	33.45	34.92
STAFF SUBTOTAL	141.75	33.64	286.79	0.0	100.22	36.39	139.09	75.67	139.11	69.47
FACILITIES SUBTOTAL	24.76	4.88	50.80	0.0	37.65	8.94	32.44	16.51	33.59	13.17
EQUIPMENT SUBTOTAL	2.47	1.51	2.38	0.0	2.34	0.52	3.54	2.92	2.89	2.01
MATERIALS SUBTOTAL	10.06	5.30	12.25	0.0	10.03	4.27	15.18	10.00	12.40	7.31
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.15	0.29	2.83	4.23	1.25	2.99
TOTAL COST	179.04	42.21	352.23	0.0	150.40	43.85	193.08	97.25	189.25	83.03
LOW	143.86		352.23		105.88		76.80		76.80	
1ST QUARTILE	155.64		352.23		127.09		145.84		136.58	
2ND QUARTILE	167.44		352.23		142.99		190.20		176.30	
3RD QUARTILE	196.64		352.23		166.30		208.57		207.89	
HIGH	225.84		352.23		20[illegible].73		366.20		366.20	

Table E-26

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 6 FOR GRADE 2

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	1		2		1		6		10	
CLASS INSTRUCTOR	191.69	0.0	151.64	119.35	48.90	0.0	33.20	8.35	74.31	75.36
TEACHER AIDE	31.92	0.0	26.38	13.49	0.0	0.0	3.78	3.48	10.74	13.28
READING SPECIALIST	55.56	0.0	0.0	0.0	7.05	0.0	13.10	18.22	14.12	20.64
OTHER STAFF	13.99	0.0	67.79	73.30	3.70	0.0	17.50	6.73	25.83	33.63
STAFF SUBTOTAL	293.16	0.0	245.82	179.24	59.65	0.0	67.59	22.16	125.00	113.58
FACILITIES SUBTOTAL	71.47	0.0	68.18	46.42	27.66	0.0	18.55	6.35	34.68	28.99
EQUIPMENT SUBTOTAL	4.36	0.0	4.31	1.92	3.65	0.0	3.43	2.22	3.72	1.82
MATERIALS SUBTOTAL	5.96	0.0	15.23	3.46	6.54	0.0	10.59	6.50	10.65	5.81
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.32	0.45	0.58	0.0	1.19	2.91	0.84	2.23
TOTAL COST	374.95	0.0	333.85	219.83	98.09	0.0	101.34	27.95	174.88	141.87
LOW	374.95		178.41		98.09		54.57		54.57	
1ST QUARTILE	374.95		256.13		98.09		90.69		95.30	
2ND QUARTILE	374.95		333.85		98.09		105.47		119.65	
3RD QUARTILE	374.95		411.57		98.09		121.20		166.39	
HIGH	374.95		489.29		98.09		130.32		489.29	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	1		1		3		5		10	
CLASS INSTRUCTOR	53.03	0.0	144.07	0.0	80.02	5.04	60.81	44.08	74.12	39.65
TEACHER AIDE	22.82	0.0	9.43	0.0	0.56	0.96	6.34	5.71	6.56	7.55
READING SPECIALIST	0.0	0.0	55.18	0.0	35.21	51.59	31.09	34.39	31.63	35.98
OTHER STAFF	97.21	0.0	119.65	0.0	9.70	6.48	24.07	14.53	36.63	40.08
STAFF SUBTOTAL	173.05	0.0	328.33	0.0	125.49	[illegible]4.95	122.31	89.15	148.94	91.76
FACILITIES SUBTOTAL	27.76	0.0	61.65	0.0	42.35	4.10	29.49	17.47	36.39	16.03
EQUIPMENT SUBTOTAL	2.77	0.0	2.23	0.0	2.87	0.22	2.01	1.61	2.36	1.16
MATERIALS SUBTOTAL	15.15	0.0	12.72	0.0	11.53	3.90	13.91	9.46	13.20	6.70
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.19	0.34	3.29	4.56	1.70	3.47
TOTAL COST	218.73	0.0	404.93	0.0	182.44	51.56	171.00	112.26	202.60	107.05
LOW	218.73		404.93		151.02		76.80		76.80	
1ST QUARTILE	218.73		404.93		152.67		132.74		139.55	
2ND QUARTILE	218.73		404.93		153.53		139.47		152.67	
3RD QUARTILE	218.73		404.93		197.74		139.79		236.15	
HIGH	218.73		404.93		241.96		366.20		404.93	

Table E-27

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 6 FOR GRADE 4

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	3		2		2		6		13	
CLASS INSTRUCTOR	124.69	61.37	176.20	84.62	63.68	4.32	49.16	26.37	88.37	63.26
TEACHER AIDE	21.83	11.16	11.19	7.97	0.83	1.18	2.14	1.86	7.87	10.14
READING SPECIALIST	18.52	32.08	0.0	0.0	50.59	62.47	18.94	32.05	20.80	33.80
OTHER STAFF	42.69	49.84	71.83	67.65	10.46	8.67	19.95	13.79	31.72	36.38
STAFF SUBTOTAL	207.73	103.34	259.22	160.24	125.56	76.65	90.18	40.70	148.76	99.03
FACILITIES SUBTOTAL	61.24	37.00	77.87	32.71	33.76	12.33	24.26	9.20	42.51	20.93
EQUIPMENT SUBTOTAL	4.24	3.10	2.15	0.92	2.35	0.64	2.54	1.95	2.85	2.01
MATERIALS SUBTOTAL	7.46	6.23	14.73	2.76	9.37	4.92	10.31	5.67	10.19	5.20
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.32	0.45	0.29	0.41	2.74	4.30	1.36	3.08
TOTAL COST	280.68	140.68	354.29	108.82	171.34	92.13	130.04	53.23	205.66	129.18
LOW	175.16		220.78		106.19		55.68		55.68	
1ST QUARTILE	195.65		287.54		138.76		102.98		108.87	
2ND QUARTILE	216.14		354.29		171.34		129.30		175.16	
3RD QUARTILE	333.43		421.05		203.91		154.00		220.78	
HIGH	450.72		487.81		236.48		209.51		487.81	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	2		1		2		2		7	
CLASS INSTRUCTOR	63.94	23.42	81.06	0.0	80.63	29.20	69.55	12.17	72.76	17.88
TEACHER AIDE	11.36	16.06	8.57	0.0	0.83	1.18	3.57	5.05	5.73	8.30
READING SPECIALIST	17.97	25.42	55.19	0.0	49.29	64.30	8.35	11.81	29.49	35.41
OTHER STAFF	62.78	51.46	119.62	0.0	12.70	5.50	21.71	9.70	44.86	44.99
STAFF SUBTOTAL	156.05	65.53	264.44	0.0	143.46	100.18	103.18	15.11	152.83	73.19
FACILITIES SUBTOTAL	34.38	15.99	49.87	0.0	47.10	14.42	36.99	3.57	40.98	11.17
EQUIPMENT SUBTOTAL	2.63	2.66	3.37	0.0	1.79	0.47	6.48	2.09	3.59	2.61
MATERIALS SUBTOTAL	12.62	3.29	11.93	0.0	13.63	1.10	26.79	1.45	16.86	6.98
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	3.57	5.05	1.02	2.70
TOTAL COST	205.69	87.47	329.61	0.0	205.99	113.04	177.01	17.98	215.28	78.64
LOW	143.84		329.61		126.05		164.30		126.05	
1ST QUARTILE	174.76		329.61		166.02		170.66		154.07	
2ND QUARTILE	205.69		329.61		205.99		177.01		189.72	
3RD QUARTILE	236.61		329.61		245.95		183.37		276.73	
HIGH	267.53		329.61		285.92		189.72		329.61	

Table E-28

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 6 FOR GRADE 6

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	4		2		4		6		16	
CLASS INSTRUCTOR	99.80	87.77	152.79	117.73	45.90	16.78	74.56	46.49	83.49	66.04
TEACHER AIDE	17.60	17.02	18.64	2.56	1.25	1.59	2.54	2.91	8.00	11.20
READING SPECIALIST	22.88	27.60	0.0	0.0	5.59	5.08	26.30	30.29	16.98	27.63
OTHER STAFF	38.24	41.03	74.31	64.14	10.26	5.14	24.20	10.31	30.49	33.74
STAFF SUBTOTAL	178.52	129.12	245.75	179.31	63.00	22.68	127.60	70.50	138.95	103.76
FACILITIES SUBTOTAL	45.75	38.98	68.49	45.99	21.77	4.09	35.96	29.24	38.93	28.21
EQUIPMENT SUBTOTAL	2.45	0.96	3.72	1.08	1.65	0.76	4.05	4.30	3.01	2.76
MATERIALS SUBTOTAL	7.86	5.86	14.77	2.82	9.68	4.81	12.47	7.07	10.91	6.06
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.32	0.45	0.15	0.29	1.65	3.75	0.69	2.31
TOTAL COST	234.58	172.07	333.05	220.94	96.25	22.25	181.73	89.16	192.49	132.47
LOW	120.64		176.82		72.83		61.81		61.81	
1ST QUARTILE	135.12		254.93		86.57		124.95		109.83	
2ND QUARTILE	164.30		333.05		92.89		189.36		147.52	
3RD QUARTILE	263.76		411.16		102.57		224.09		223.78	
HIGH	409.89		489.28		126.38		310.68		489.28	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	2		1		3		2		8	
CLASS INSTRUCTOR	38.69	24.74	88.12	0.0	54.50	4.28	68.00	36.44	58.13	23.50
TEACHER AIDE	19.74	9.54	1.25	0.0	1.10	0.95	15.60	[illegible]	9.40	12.78
READING SPECIALIST	27.78	39.29	55.19	0.0	5.31	6.18	41.93	35.68	26.32	28.14
OTHER STAFF	56.54	60.18	119.62	0.0	11.68	4.27	31.12	23.80	41.25	44.18
STAFF SUBTOTAL	142.75	5.69	264.18	0.0	72.59	4.07	156.66	0.98	135.10	64.91
FACILITIES SUBTOTAL	16.60	6.14	37.70	0.0	30.00	4.64	34.08	10.50	28.63	11.10
EQUIPMENT SUBTOTAL	2.95	0.24	1.15	0.0	1.91	0.61	5.78	4.86	3.04	2.59
MATERIALS SUBTOTAL	10.15	7.77	12.11	0.0	10.93	4.59	19.03	7.00	12.91	6.03
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	3.84	4.67	0.96	2.50
TOTAL COST	172.45	7.89	315.14	0.0	115.43	9.16	219.38	34.12	180.64	71.08
LOW	167.44		315.14		105.88		195.25		105.88	
1ST QUARTILE	169.95		315.14		111.08		207.31		122.17	
2ND QUARTILE	172.45		315.14		116.28		219.38		172.45	
3RD QUARTILE	174.96		315.14		120.21		231.44		207.31	
HIGH	177.46		315.14		124.14		243.51		315.14	

Table E-29

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 7 FOR ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	2		0		0		0		2	
CLASS INSTRUCTOR	80.34	56.98	0.0	0.0	0.0	0.0	0.0	0.0	80.34	56.98
TEACHER AIDE	10.08	7.95	0.0	0.0	0.0	0.0	0.0	0.0	10.08	7.95
READING SPECIALIST	65.18	28.94	0.0	0.0	0.0	0.0	0.0	0.0	65.18	28.94
OTHER STAFF	18.74	15.97	0.0	0.0	0.0	0.0	0.0	0.0	18.74	15.97
STAFF SUBTOTAL	174.35	51.97	0.0	0.0	0.0	0.0	0.0	0.0	174.35	51.97
FACILITIES SUBTOTAL	31.06	19.69	0.0	0.0	0.0	0.0	0.0	0.0	31.06	19.69
EQUIPMENT SUBTOTAL	5.62	7.25	0.0	0.0	0.0	0.0	0.0	0.0	5.62	7.25
MATERIALS SUBTOTAL	22.64	17.71	0.0	0.0	0.0	0.0	0.0	0.0	22.64	17.71
DISTRICT CENTER SUBTOTAL	4.16	5.88	0.0	0.0	0.0	0.0	0.0	0.0	4.16	5.88
TOTAL COST	237.84	102.49	0.0	0.0	0.0	0.0	0.0	0.0	237.84	102.49
LOW	165.37		0.0		0.0		0.0		165.37	
1ST QUARTILE	201.61		0.0		0.0		0.0		201.61	
2ND QUARTILE	237.84		0.0		0.0		0.0		237.84	
3RD QUARTILE	274.08		0.0		0.0		0.0		274.08	
HIGH	310.32		0.0		0.0		0.0		310.32	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	2		0		0		0		2	
CLASS INSTRUCTOR	56.14	31.81	0.0	0.0	0.0	0.0	0.0	0.0	56.14	31.81
TEACHER AIDE	10.08	7.95	0.0	0.0	0.0	0.0	0.0	0.0	10.08	7.95
READING SPECIALIST	35.78	50.60	0.0	0.0	0.0	0.0	0.0	0.0	35.78	50.60
OTHER STAFF	18.74	15.97	0.0	0.0	0.0	0.0	0.0	0.0	18.74	15.97
STAFF SUBTOTAL	120.75	58.48	0.0	0.0	0.0	0.0	0.0	0.0	120.75	58.48
FACILITIES SUBTOTAL	24.97	17.58	0.0	0.0	0.0	0.0	0.0	0.0	24.97	17.58
EQUIPMENT SUBTOTAL	2.85	3.26	0.0	0.0	0.0	0.0	0.0	0.0	2.85	3.26
MATERIALS SUBTOTAL	22.80	16.16	0.0	0.0	0.0	0.0	0.0	0.0	22.80	16.16
DISTRICT CENTER SUBTOTAL	4.16	5.88	0.0	0.0	0.0	0.0	0.0	0.0	4.16	5.80
TOTAL COST	175.53	58.76	0.0	0.0	0.0	0.0	0.0	0.0	175.53	58.76
LOW	139.64		0.0		0.0		0.0		139.64	
1ST QUARTILE	157.58		0.0		0.0		0.0		157.58	
2ND QUARTILE	175.53		0.0		0.0		0.0		175.53	
3RD QUARTILE	193.48		0.0		0.0		0.0		193.48	
HIGH	211.43		0.0		0.0		0.0		211.43	

Table E-30

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 7 FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	1		0		0		0		1	
CLASS INSTRUCTOR	120.63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.63	0.0
TEACHER AIDE	15.71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.71	0.0
READING SPECIALIST	44.72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.72	0.0
OTHER STAFF	30.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.04	0.0
STAFF SUBTOTAL	211.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.10	0.0
FACILITIES SUBTOTAL	44.98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.98	0.0
EQUIPMENT SUBTOTAL	10.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.75	0.0
MATERIALS SUBTOTAL	35.17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.17	0.0
DISTRICT CENTER SUBTOTAL	8.32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.32	0.0
TOTAL COST	310.32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	310.32	0.0
LOW	310.32		0.0		0.0		0.0		310.32	
1ST QUARTILE	310.32		0.0		0.0		0.0		310.32	
2ND QUARTILE	310.32		0.0		0.0		0.0		310.32	
3RD QUARTILE	310.32		0.0		0.0		0.0		310.32	
HIGH	310.32		0.0		0.0		0.0		310.32	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	1		0		0		0		1	
CLASS INSTRUCTOR	85.94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.94	0.0
TEACHER AIDE	4.46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.46	0.0
READING SPECIALIST	30.64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.64	0.0
OTHER STAFF	7.45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.45	0.0
STAFF SUBTOTAL	128.49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.49	0.0
FACILITIES SUBTOTAL	39.38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.38	0.0
EQUIPMENT SUBTOTAL	0.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.14	0.0
MATERIALS SUBTOTAL	10.84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.84	0.0
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL COST	178.86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	178.86	0.0
LOW	178.86		0.0		0.0		0.0		178.86	
1ST QUARTILE	178.86		0.0		0.0		0.0		178.86	
2ND QUARTILE	178.86		0.0		0.0		0.0		178.86	
3RD QUARTILE	178.86		0.0		0.0		0.0		178.86	
HIGH	178.86		0.0		0.0		0.0		178.86	

Table E-31

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 7 FOR GRADE 4

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	1		0		0		0		1	
CLASS INSTRUCTOR	40.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.05	0.0
TEACHER AIDE	4.46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.46	0.0
READING SPECIALIST	85.65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.65	0.0
OTHER STAFF	7.45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.45	0.0
STAFF SUBTOTAL	137.61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	137.61	0.0
FACILITIES SUBTOTAL	17.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.14	0.0
EQUIPMENT SUBTOTAL	0.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.50	0.0
MATERIALS SUBTOTAL	10.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.12	0.0
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL COST	165.37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.37	0.0
LOW	165.37		0.0		0.0		0.0		165.37	
1ST QUARTILE	165.37		0.0		0.0		0.0		165.37	
2ND QUARTILE	165.37		0.0		0.0		0.0		165.37	
3RD QUARTILE	165.37		0.0		0.0		0.0		165.37	
HIGH	165.37		0.0		0.0		0.0		165.37	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	2		0		0		0		2	
CLASS INSTRUCTOR	43.73	45.58	0.0	0.0	0.0	0.0	0.0	0.0	43.73	45.58
TEACHER AIDE	10.08	7.95	0.0	0.0	0.0	0.0	0.0	0.0	10.08	7.95
READING SPECIALIST	42.82	60.56	0.0	0.0	0.0	0.0	0.0	0.0	42.82	60.56
OTHER STAFF	18.74	15.97	0.0	0.0	0.0	0.0	0.0	0.0	18.74	15.97
STAFF SUBTOTAL	115.38	82.21	0.0	0.0	0.0	0.0	0.0	0.0	115.38	82.21
FACILITIES SUBTOTAL	20.53	22.97	0.0	0.0	0.0	0.0	0.0	0.0	20.53	22.97
EQUIPMENT SUBTOTAL	3.58	3.83	0.0	0.0	0.0	0.0	0.0	0.0	3.58	3.83
MATERIALS SUBTOTAL	23.15	16.41	0.0	0.0	0.0	0.0	0.0	0.0	23.15	16.41
DISTRICT CENTER SUBTOTAL	4.16	5.88	0.0	0.0	0.0	0.0	0.0	0.0	4.16	5.88
TOTAL COST	166.80	79.06	0.0	0.0	0.0	0.0	0.0	0.0	166.80	79.06
LOW	110.90		0.0		0.0		0.0		110.90	
1ST QUARTILE	138.85		0.0		0.0		0.0		138.85	
2ND QUARTILE	166.80		0.0		0.0		0.0		166.80	
3RD QUARTILE	194.76		0.0		0.0		0.0		194.76	
HIGH	222.71		0.0		0.0		0.0		222.71	

Table E-32

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 7 FOR GRADE 6

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	2		0		0		0		2	
CLASS INSTRUCTOR	67.31	12.68	0.0	0.0	0.0	0.0	0.0	0.0	67.31	12.68
TEACHER AIDE	10.08	7.95	0.0	0.0	0.0	0.0	0.0	0.0	10.08	7.95
READING SPECIALIST	42.82	60.56	0.0	0.0	0.0	0.0	0.0	0.0	42.82	60.56
OTHER STAFF	18.74	15.97	0.0	0.0	0.0	0.0	0.0	0.0	18.74	15.97
STAFF SUBTOTAL	138.96	49.32	0.0	0.0	0.0	0.0	0.0	0.0	138.96	49.32
FACILITIES SUBTOTAL	29.21	10.55	0.0	0.0	0.0	0.0	0.0	0.0	29.21	10.55
EQUIPMENT SUBTOTAL	2.18	2.41	0.0	0.0	0.0	0.0	0.0	0.0	2.18	2.41
MATERIALS SUBTOTAL	22.60	15.61	0.0	0.0	0.0	0.0	0.0	0.0	22.60	15.61
DISTRICT CENTER SUBTOTAL	4.16	5.88	0.0	0.0	0.0	0.0	0.0	0.0	4.16	5.88
TOTAL COST	197.12	35.97	0.0	0.0	0.0	0.0	0.0	0.0	197.12	35.97
LOW	171.69		0.0		0.0		0.0		171.69	
1ST QUARTILE	184.41		0.0		0.0		0.0		184.41	
2ND QUARTILE	197.12		0.0		0.0		0.0		197.12	
3RD QUARTILE	209.84		0.0		0.0		0.0		209.84	
HIGH	222.55		0.0		0.0		0.0		222.55	

Table E-33

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 8 FOR ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	3		4		0		5		12	
CLASS INSTRUCTOR	135.65	105.46	68.24	20.13	0.0	0.0	75.67	40.00	88.19	59.54
TEACHER AIDE	119.27	133.85	20.09	10.22	0.0	0.0	8.48	11.47	40.05	75.12
READING SPECIALIST	22.27	38.57	38.48	30.90	0.0	0.0	26.39	19.03	29.39	26.68
OTHER STAFF	24.10	19.50	41.20	35.04	0.0	0.0	19.71	17.27	28.02	24.73
STAFF SUBTOTAL	301.36	130.04	168.09	63.50	0.0	0.0	130.25	38.49	185.64	99.36
FACILITIES SUBTOTAL	77.00	62.06	36.49	11.69	0.0	0.0	37.00	20.90	47.22	34.96
EQUIPMENT SUBTOTAL	7.45	5.22	0.94	1.10	0.0	0.0	2.53	0.80	3.23	3.54
MATERIALS SUBTOTAL	14.63	5.36	7.27	5.07	0.0	0.0	12.85	1.92	11.44	4.80
DISTRICT CENTER SUBTOTAL	5.32	5.24	9.00	16.46	0.0	0.0	7.05	14.63	7.29	12.61
TOTAL COST	405.84	157.10	221.06	77.12	0.0	0.0	190.57	60.03	254.82	126.14
LOW	224.44		153.34		0.0		99.74		99.74	
1ST QUARTILE	359.56		159.07		0.0		164.42		163.56	
2ND QUARTILE	494.68		212.20		0.0		210.51		224.92	
3RD QUARTILE	496.53		274.99		0.0		225.40		274.99	
HIGH	498.38		309.68		0.0		252.79		498.38	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	2		1		0		4		7	
CLASS INSTRUCTOR	53.32	17.07	9.78	0.0	0.0	0.0	89.10	26.81	67.55	36.62
TEACHER AIDE	16.03	11.26	29.60	0.0	0.0	0.0	4.70	7.51	11.72	12.01
READING SPECIALIST	37.99	40.74	0.0	0.0	0.0	0.0	22.51	19.56	23.72	25.11
OTHER STAFF	13.02	3.61	40.17	0.0	0.0	0.0	10.99	5.40	15.74	11.56
STAFF SUBTOTAL	121.17	16.00	79.55	0.0	0.0	0.0	127.30	33.46	118.[illegible]	30.16
FACILITIES SUBTOTAL	27.14	2.10	6.02	0.0	0.0	0.0	38.14	12.27	30.41	14.70
EQUIPMENT SUBTOTAL	2.29	1.43	2.64	0.0	0.0	0.0	2.50	0.72	2.46	0.70
MATERIALS SUBTOTAL	16.54	5.76	20.48	0.0	0.0	0.0	13.06	2.03	15.11	3.99
DISTRICT CENTER SUBTOTAL	5.23	7.40	0.0	0.0	0.0	0.0	8.82	16.26	6.53	12.35
TOTAL COST	172.38	28.42	108.69	0.0	0.0	0.0	189.81	54.95	173.24	50.22
LOW	152.28		108.69		0.0		132.50		108.69	
1ST QUARTILE	162.33		108.69		0.0		154.91		142.43	
2ND QUARTILE	172.38		108.69		0.0		183.02		162.36	
3RD QUARTILE	182.42		108.69		0.0		218.71		198.87	
HIGH	192.47		108.69		0.0		259.02		259.02	

Table E-34

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 8 FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	2		3		0		3		8	
CLASS INSTRUCTOR	168.31	181.30	85.44	15.92	0.0	0.0	84.79	56.80	105.91	84.69
TEACHER AIDE	48.15	68.10	30.09	19.00	0.0	0.0	10.03	14.08	27.08	32.83
READING SPECIALIST	0.0	0.0	35.01	36.90	0.0	0.0	30.02	15.36	24.39	26.27
OTHER STAFF	28.48	25.48	50.21	27.22	0.0	0.0	14.06	7.04	34.22	27.36
STAFF SUBTOTAL	244.94	87.72	200.75	34.92	0.0	0.0	138.89	73.25	191.60	71.48
FACILITIES SUBTOTAL	116.10	135.70	41.18	11.36	0.0	0.0	43.08	33.83	60.62	64.58
EQUIPMENT SUBTOTAL	4.14	4.50	1.83	1.60	0.0	0.0	3.75	0.97	3.13	2.25
MATERIALS SUBTOTAL	16.50	12.71	7.73	4.50	0.0	0.0	11.56	0.48	11.36	6.49
DISTRICT CENTER SUBTOTAL	2.74	3.88	11.23	19.46	0.0	0.0	11.13	19.09	9.07	15.16
TOTAL COST	384.43	227.84	270.71	34.42	0.0	0.0	208.43	109.98	275.78	128.60
LOW	223.32		244.44		0.0		82.93		82.93	
1ST QUARTILE	303.87		251.23		0.0		160.63		239.16	
2ND QUARTILE	384.43		258.02		0.0		254.33		256.17	
3RD QUARTILE	464.98		283.85		0.0		271.17		293.43	
HIGH	545.53		309.68		0.0		288.02		545.53	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	1		0		0		1		2	
CLASS INSTRUCTOR	82.85	0.0	0.0	0.0	0.0	0.0	76.11	0.0	79.48	4.77
TEACHER AIDE	27.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.65	19.30
READING SPECIALIST	9.19	0.0	0.0	0.0	0.0	0.0	14.90	0.0	12.04	4.04
OTHER STAFF	10.47	0.0	0.0	0.0	0.0	0.0	7.18	0.0	8.82	2.33
STAFF SUBTOTAL	129.81	0.0	0.0	0.0	0.0	0.0	98.19	0.0	114.00	22.36
FACILITIES SUBTOTAL	35.73	0.0	0.0	0.0	0.0	0.0	32.57	0.0	34.15	2.23
EQUIPMENT SUBTOTAL	1.41	0.0	0.0	0.0	0.0	0.0	1.39	0.0	1.40	0.01
MATERIALS SUBTOTAL	12.19	0.0	0.0	0.0	0.0	0.0	12.77	0.0	12.48	0.41
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL COST	179.14	0.0	0.0	0.0	0.0	0.0	144.92	0.0	162.03	24.20
LOW	179.14		0.0		0.0		144.92		144.92	
1ST QUARTILE	179.14		0.0		0.0		144.92		153.47	
2ND QUARTILE	179.14		0.0		0.0		144.92		162.03	
3RD QUARTILE	179.14		0.0		0.0		144.92		170.58	
HIGH	179.14		0.0		0.0		144.92		179.14	

Table E-35

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 8 FOR GRADE 4

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	2		3		0		4		9	
CLASS INSTRUCTOR	169.31	72.11	61.65	9.11	0.0	0.0	62.09	29.35	85.77	56.89
TEACHER AIDE	223.74	153.11	11.78	7.76	0.0	0.0	10.68	12.37	58.39	108.59
READING SPECIALIST	0.0	0.0	40.86	37.50	0.0	0.0	32.99	13.88	28.28	26.35
OTHER STAFF	28.48	25.48	25.42	20.01	0.0	0.0	24.03	17.89	25.48	17.45
STAFF SUBTOTAL	421.53	106.48	139.71	60.51	0.0	0.0	129.79	36.72	197.93	137.59
FACILITIES SUBTOTAL	78.25	22.66	35.55	9.51	0.0	0.0	30.31	15.82	42.71	24.34
EQUIPMENT SUBTOTAL	10.73	6.95	1.04	1.24	0.0	0.0	1.94	1.12	3.59	4.84
MATERIALS SUBTOTAL	10.84	2.73	6.36	5.14	0.0	0.0	12.22	1.71	9.96	4.03
DISTRICT CENTER SUBTOTAL	2.74	3.88	12.10	18.75	0.0	0.0	8.35	16.55	8.35	14.34
TOTAL COST	524.09	91.93	194.76	85.49	0.0	0.0	182.61	58.00	262.54	161.76
LOW	459.09		126.66		0.0		116.55		116.55	
1ST QUARTILE	491.59		146.79		0.0		148.18		158.72	
2ND QUARTILE	524.09		166.92		0.0		181.35		203.98	
3RD QUARTILE	556.59		228.82		0.0		215.78		290.71	
HIGH	589.10		290.71		0.0		251.18		589.10	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	2		0		0		3		5	
CLASS INSTRUCTOR	46.80	7.86	0.0	0.0	0.0	0.0	70.21	11.06	60.85	15.52
TEACHER AIDE	15.90	9.94	0.0	0.0	0.0	0.0	0.43	0.74	6.62	9.84
READING SPECIALIST	37.99	40.74	0.0	0.0	0.0	0.0	30.02	15.36	33.21	23.49
OTHER STAFF	13.02	3.61	0.0	0.0	0.0	0.0	13.01	5.50	13.01	4.28
STAFF SUBTOTAL	113.72	26.54	0.0	0.0	0.0	0.0	113.67	31.68	113.69	26.04
FACILITIES SUBTOTAL	24.51	1.54	0.0	0.0	0.0	0.0	33.01	8.85	29.61	7.84
EQUIPMENT SUBTOTAL	2.24	1.50	0.0	0.0	0.0	0.0	3.18	2.25	2.81	1.83
MATERIALS SUBTOTAL	16.65	5.62	0.0	0.0	0.0	0.0	12.52	1.86	14.17	3.84
DISTRICT CENTER SUBTOTAL	5.23	7.40	0.0	0.0	0.0	0.0	11.13	19.09	8.77	14.37
TOTAL COST	162.35	42.60	0.0	0.0	0.0	0.0	173.52	59.08	169.05	47.29
LOW	132.23		0.0		0.0		122.73		122.73	
1ST QUARTILE	147.29		0.0		0.0		141.10		132.23	
2ND QUARTILE	162.35		0.0		0.0		159.47		159.47	
3RD QUARTILE	177.41		0.0		0.0		198.91		192.47	
HIGH	192.47		0.0		0.0		238.36		238.36	

Table E-36

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 8 FOR GRADE 6

	TOTAL TITLE I		PARTIAL TITLE I		NON TITLE I		UNKNOWN		ALL SOURCES	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	2		3		0		3		8	
CLASS INSTRUCTOR	85.21	42.99	45.89	15.14	0.0	0.0	73.30	46.25	66.00	35.25
TEACHER AIDE	178.16	219.79	10.27	11.89	0.0	0.0	4.76	7.00	50.18	114.90
READING SPECIALIST	33.40	47.23	40.86	37.50	0.0	0.0	23.82	21.53	32.60	30.26
OTHER STAFF	31.03	21.87	20.56	13.70	0.0	0.0	22.36	22.29	23.85	16.86
STAFF SUBTOTAL	327.80	237.42	117.58	45.44	0.0	0.0	124.24	14.91	172.64	133.74
FACILITIES SUBTOTAL	47.20	21.67	24.88	6.13	0.0	0.0	36.68	22.03	34.89	17.44
EQUIPMENT SUBTOTAL	10.35	7.06	0.90	1.31	0.0	0.0	2.49	1.80	3.86	5.01
MATERIALS SUBTOTAL	12.82	5.65	9.45	9.93	0.0	0.0	13.48	2.13	11.80	6.16
DISTRICT CENTER SUBTOTAL	7.97	3.53	12.10	18.75	0.0	0.0	0.70	1.02	6.79	11.44
TOTAL COST	406.16	256.98	164.92	60.27	0.0	0.0	177.59	29.69	229.98	150.27
LOW	224.44		122.28		0.0		152.83		122.28	
1ST QUARTILE	315.30		130.45		0.0		161.13		149.27	
2ND QUARTILE	406.16		138.61		0.0		169.44		189.97	
3RD QUARTILE	497.01		186.25		0.0		189.97		226.80	
HIGH	587.87		233.88		0.0		210.51		587.87	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	0		1		0		4		5	
CLASS INSTRUCTOR	0.0	0.0	9.78	0.0	0.0	0.0	91.02	26.62	74.77	43.03
TEACHER AIDE	0.0	0.0	29.60	0.0	0.0	0.0	7.09	11.62	11.60	14.24
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	22.51	19.56	18.01	19.70
OTHER STAFF	0.0	0.0	40.17	0.0	0.0	0.0	10.87	5.22	16.73	13.86
STAFF SUBTOTAL	0.0	0.0	79.55	0.0	0.0	0.0	131.50	38.87	121.11	40.90
FACILITIES SUBTOTAL	0.0	0.0	6.02	0.0	0.0	0.0	37.57	12.59	31.26	17.83
EQUIPMENT SUBTOTAL	0.0	0.0	2.64	0.0	0.0	0.0	2.28	0.49	2.35	0.45
MATERIALS SUBTOTAL	0.0	0.0	20.48	0.0	0.0	0.0	12.95	2.05	14.46	3.80
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	8.82	16.26	7.05	14.63
TOTAL COST	0.0	0.0	108.69	0.0	0.0	0.0	193.12	59.47	176.23	63.86
LOW	0.0		108.69		0.0		131.77		108.69	
1ST QUARTILE	0.0		108.69		0.0		156.94		131.77	
2ND QUARTILE	0.0		108.69		0.0		185.30		165.33	
3RD QUARTILE	0.0		108.69		0.0		221.48		205.27	
HIGH	0.0		108.69		0.0		270.10		270.10	

Table E-37

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 9 FOR ALL GRADES

	TOTAL -----TITLE I-----		PARTIAL -----TITLE I-----		NON -----TITLE I-----		-----UNKNOWN-----		ALL -----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	5		0		0		3		8	
CLASS INSTRUCTOR	95.94	76.16	0.0	0.0	0.0	0.0	64.74	30.44	84.24	61.97
TEACHER AIDE	17.54	12.66	0.0	0.0	0.0	0.0	14.22	17.07	16.30	13.33
READING SPECIALIST	11.70	17.29	0.0	0.0	0.0	0.0	47.04	40.82	24.95	31.33
OTHER STAFF	18.38	9.65	0.0	0.0	0.0	0.0	28.11	17.69	22.03	12.96
STAFF SUBTOTAL	143.56	76.17	0.0	0.0	0.0	0.0	154.11	53.98	147.52	64.63
FACILITIES SUBTOTAL	44.29	33.55	0.0	0.0	0.0	0.0	33.09	19.61	40.09	28.09
EQUIPMENT SUBTOTAL	6.44	5.42	0.0	0.0	0.0	0.0	3.10	1.96	5.18	4.57
MATERIALS SUBTOTAL	11.34	3.23	0.0	0.0	0.0	0.0	8.90	1.59	10.43	2.88
DISTRICT CENTER SUBTOTAL	6.24	11.59	0.0	0.0	0.0	0.0	1.09	1.88	4.31	9.21
TOTAL COST	211.87	99.98	0.0	0.0	0.0	0.0	200.28	59.72	207.52	[illegible]
LOW	132.00		0.0		0.0		134.88		132.00	
1ST QUARTILE	136.57		0.0		0.0		174.47		136.15	
2ND QUARTILE	154.36		0.0		0.0		214.06		184.21	
3RD QUARTILE	286.95		0.0		0.0		232.99		260.67	
HIGH	349.45		0.0		0.0		251.91		349.45	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		1		0		2		8	
CLASS INSTRUCTOR	40.53	10.98	65.35	0.0	0.0	0.0	49.87	39.38	50.97	17.99
TEACHER AIDE	4.68	4.59	30.14	0.0	0.0	0.0	19.97	18.64	11.68	12.85
READING SPECIALIST	8.59	11.80	111.80	0.0	0.0	0.0	36.60	51.76	20.49	41.90
OTHER STAFF	20.49	7.26	7.37	0.0	0.0	0.0	37.86	37.05	23.19	18.13
STAFF SUBTOTAL	82.29	12.80	214.66	0.0	0.0	0.0	144.30	35.45	114.34	51.97
FACILITIES SUBTOTAL	24.78	7.22	27.97	0.0	0.0	0.0	24.42	14.03	25.09	7.70
EQUIPMENT SUBTOTAL	2.15	1.04	47.28	0.0	0.0	0.0	1.11	0.14	7.53	16.09
MATERIALS SUBTOTAL	13.65	4.45	5.96	0.0	0.0	0.0	8.39	2.27	11.38	4.75
DISTRICT CENTER SUBTOTAL	6.24	11.59	3.25	0.0	0.0	0.0	1.63	2.31	4.71	9.07
TOTAL COST	129.11	26.83	299.12	0.0	0.0	0.0	179.85	44.77	163.05	65.16
LOW	95.13		299.12		0.0		148.19		95.13	
1ST QUARTILE	115.63		299.12		0.0		164.02		123.79	
2ND QUARTILE	126.52		299.12		0.0		179.85		145.20	
3RD QUARTILE	142.21		299.12		0.0		195.68		177.42	
HIGH	166.05		299.12		0.0		211.51		299.12	

Table E-38

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 9 FOR GRADE 2

	TOTAL -----TITLE I-----		PARTIAL -----TITLE I-----		NON -----TITLE I-----		-----UNKNOWN-----		ALL -----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	4		0		0		2		6	
CLASS INSTRUCTOR	116.57	89.70	0.0	0.0	0.0	0.0	75.33	27.09	102.82	73.67
TEACHER AIDE	22.12	8.94	0.0	0.0	0.0	0.0	21.32	16.72	21.85	10.20
READING SPECIALIST	5.02	10.03	0.0	0.0	0.0	0.0	70.55	3.74	26.86	34.76
OTHER STAFF	17.52	11.49	0.0	0.0	0.0	0.0	35.46	33.65	23.50	19.79
STAFF SUBTOTAL	161.22	91.22	0.0	0.0	0.0	0.0	202.68	19.54	175.04	74.35
FACILITIES SUBTOTAL	49.77	35.98	0.0	0.0	0.0	0.0	41.36	19.09	46.97	29.47
EQUIPMENT SUBTOTAL	7.48	5.59	0.0	0.0	0.0	0.0	3.03	2.72	6.00	5.05
MATERIALS SUBTOTAL	10.26	2.63	0.0	0.0	0.0	0.0	8.74	2.35	9.76	2.43
DISTRICT CENTER SUBTOTAL	7.79	12.76	0.0	0.0	0.0	0.0	1.63	2.31	5.74	10.44
TOTAL COST	236.54	111.37	0.0	0.0	0.0	0.0	257.44	7.83	243.51	87.01
LOW	136.93		0.0		0.0		251.91		136.93	
1ST QUARTILE	150.00		0.0		0.0		254.68		170.75	
2ND QUARTILE	218.51		0.0		0.0		257.44		257.44	
3RD QUARTILE	305.05		0.0		0.0		260.21		277.75	
HIGH	372.21		0.0		0.0		262.98		372.21	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	5		1		0		1		7	
CLASS INSTRUCTOR	53.99	16.91	65.35	0.0	0.0	0.0	77.71	0.0	59.00	16.63
TEACHER AIDE	6.11	6.62	30.14	0.0	0.0	0.0	6.79	0.0	9.64	10.56
READING SPECIALIST	4.01	8.98	111.80	0.0	0.0	0.0	73.20	0.0	29.30	45.19
OTHER STAFF	20.23	7.53	7.37	0.0	0.0	0.0	11.67	0.0	17.17	8.17
STAFF SUBTOTAL	84.34	16.59	214.66	0.0	0.0	0.0	169.37	0.0	115.10	55.81
FACILITIES SUBTOTAL	26.06	5.36	27.97	0.0	0.0	0.0	34.34	0.0	27.51	5.36
EQUIPMENT SUBTOTAL	2.51	0.80	47.28	0.0	0.0	0.0	1.02	0.0	8.70	17.04
MATERIALS SUBTOTAL	13.82	4.15	5.96	0.0	0.0	0.0	6.79	0.0	11.70	4.97
DISTRICT CENTER SUBTOTAL	6.24	11.59	3.25	0.0	0.0	0.0	0.0	0.0	4.92	9.77
TOTAL COST	132.97	23.06	299.12	0.0	0.0	0.0	211.51	0.0	167.93	67.51
LOW	93.86		299.12		0.0		211.51		93.86	
1ST QUARTILE	132.51		299.12		0.0		211.51		137.36	
2ND QUARTILE	142.21		299.12		0.0		211.51		163.08	
3RD QUARTILE	143.08		299.12		0.0		211.51		182.36	
HIGH	153.21		299.12		0.0		211.51		299.12	

Table E-39

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 9 FOR GRADE 4

	TOTAL -----TITLE I---- MEAN	S.D.	PARTIAL -----TITLE I---- MEAN	S.D.	NON -----TITLE I---- MEAN	S.D.	----UNKNOWN----- MEAN	S.D.	ALL ----SOURCES----- MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	4		0		0		1		5	
CLASS INSTRUCTOR	186.91	85.62	0.0	0.0	0.0	0.0	15.22	0.0	88.57	84.73
TEACHER AIDE	16.98	14.63	0.0	0.0	0.0	0.0	33.15	0.0	20.21	14.59
READING SPECIALIST	9.61	19.22	0.0	0.0	0.0	0.0	67.91	0.0	21.27	30.93
OTHER STAFF	23.02	7.38	0.0	0.0	0.0	0.0	36.66	0.0	25.74	8.83
STAFF SUBTOTAL	156.52	86.34	0.0	0.0	0.0	0.0	152.94	0.0	155.80	74.79
FACILITIES SUBTOTAL	49.42	36.45	0.0	0.0	0.0	0.0	6.51	0.0	40.84	36.94
EQUIPMENT SUBTOTAL	3.86	2.01	0.0	0.0	0.0	0.0	1.72	0.0	3.43	1.99
MATERIALS SUBTOTAL	10.90	3.58	0.0	0.0	0.0	0.0	9.61	0.0	10.64	3.09
DISTRICT CENTER SUBTOTAL	7.17	13.17	0.0	0.0	0.0	0.0	3.26	0.0	6.39	11.54
TOTAL COST	227.86	112.29	0.0	0.0	0.0	0.0	174.04	0.0	217.09	100.18
LOW	129.44		0.0		0.0		174.04		129.44	
1ST QUARTILE	134.79		0.0		0.0		174.04		136.57	
2ND QUARTILE	214.57		0.0		0.0		174.04		174.04	
3RD QUARTILE	307.65		0.0		0.0		174.04		292.58	
HIGH	352.85		0.0		0.0		174.04		352.85	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	4		0		0		0		4	
CLASS INSTRUCTOR	45.72	31.25	0.0	0.0	0.0	0.0	0.0	0.0	45.72	31.25
TEACHER AIDE	2.21	2.62	0.0	0.0	0.0	0.0	0.0	0.0	2.21	2.62
READING SPECIALIST	9.61	19.22	0.0	0.0	0.0	0.0	0.0	0.0	9.61	19.22
OTHER STAFF	21.51	7.74	0.0	0.0	0.0	0.0	0.0	0.0	21.51	7.74
STAFF SUBTOTAL	79.05	30.31	0.0	0.0	0.0	0.0	0.0	0.0	79.05	30.31
FACILITIES SUBTOTAL	22.33	13.34	0.0	0.0	0.0	0.0	0.0	0.0	22.33	13.34
EQUIPMENT SUBTOTAL	1.81	1.26	0.0	0.0	0.0	0.0	0.0	0.0	1.81	1.26
MATERIALS SUBTOTAL	12.32	4.45	0.0	0.0	0.0	0.0	0.0	0.0	12.32	4.45
DISTRICT CENTER SUBTOTAL	7.17	13.17	0.0	0.0	0.0	0.0	0.0	0.0	7.17	13.17
TOTAL COST	122.68	54.25	0.0	0.0	0.0	0.0	0.0	0.0	122.68	54.25
LOW	70.72		0.0		0.0		0.0		70.72	
1ST QUARTILE	95.29		0.0		0.0		0.0		95.29	
2ND QUARTILE	116.78		0.0		0.0		0.0		110.78	
3RD QUARTILE	138.17		0.0		0.0		0.0		138.17	
HIGH	198.44		0.0		0.0		0.0		198.44	

Table E-40

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 9 [illegible] GRADE 6

	TOTAL -----TITLE I---- MEAN	S.D.	PARTIAL -----TITLE I---- MEAN	S.D.	NON -----TITLE I---- MEAN	S.D.	----UNKNOWN----- MEAN	S.D.	ALL ----SOURCES----- MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	2		0		0		1		3	
CLASS INSTRUCTOR	89.58	68.31	0.0	0.0	0.0	0.0	66.09	0.0	81.75	50.17
TEACHER AIDE	16.14	22.83	0.0	0.0	0.0	0.0	0.0	0.0	10.76	18.64
READING SPECIALIST	19.22	27.18	0.0	0.0	0.0	0.0	0.0	0.0	12.81	22.19
OTHER STAFF	17.53	0.55	0.0	0.0	0.0	0.0	25.83	0.0	20.30	4.81
STAFF SUBTOTAL	142.47	64.51	0.0	0.9	0.0	0.0	91.92	0.0	125.62	54.15
FACILITIES SUBTOTAL	54.09	43.48	0.0	0.0	0.0	0.0	28.28	0.0	45.49	34.17
EQUIPMENT SUBTOTAL	5.77	6.94	0.0	0.0	0.0	0.0	5.02	0.0	5.52	4.92
MATERIALS SUBTOTAL	11.41	5.77	0.0	0.0	0.0	0.0	9.66	0.0	10.83	4.20
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL COST	213.75	109.16	0.0	0.0	0.0	0.0	134.88	0.0	187.46	89.62
LOW	136.57		0.0		0.0		134.88		134.88	
1ST QUARTILE	175.16		0.0		0.0		134.88		135.72	
2ND QUARTILE	213.75		0.0		0.0		134.88		136.57	
3RD QUARTILE	252.35		0.0		0.0		134.88		213.75	
HIGH	290.94		0.0		0.0		134.88		290.94	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	3		0		0		1		4	
CLASS INSTRUCTOR	55.76	18.41	0.0	0.0	0.0	0.0	22.02	0.0	47.32	22.59
TEACHER AIDE	1.86	2.81	0.0	0.0	0.0	0.0	33.15	0.0	9.68	15.81
READING SPECIALIST	12.81	22.19	0.0	0.0	0.0	0.0	0.0	0.0	9.61	19.22
OTHER STAFF	16.03	2.63	0.0	0.0	0.0	0.0	64.06	0.0	28.04	24.11
STAFF SUBTOTAL	86.46	37.86	0.0	0.0	0.0	0.0	119.23	0.0	94.65	34.99
FACILITIES SUBTOTAL	27.99	10.74	0.0	0.0	0.0	0.0	14.50	0.0	24.61	11.06
EQUIPMENT SUBTOTAL	1.05	0.40	0.0	0.0	0.0	0.0	1.21	0.0	1.09	0.34
MATERIALS SUBTOTAL	11.35	4.02	0.0	0.0	0.0	0.0	9.99	0.0	11.01	3.99
DISTRICT CENTER SUBTOTAL	0.60	1.03	0.0	0.0	0.0	0.0	3.26	0.0	1.26	1.58
TOTAL COST	127.44	45.04	0.0	0.0	0.0	0.0	148.19	0.0	132.63	38.21
LOW	82.35		0.0		0.0		148.19		82.35	
1ST QUARTILE	104.95		0.0		0.0		148.19		116.25	
2ND QUARTILE	127.55		0.0		0.0		148.19		137.87	
3RD QUARTILE	149.99		0.0		0.0		148.19		154.25	
HIGH	172.43		0.0		0.0		148.19		172.43	

Table E-41

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER10 FOR ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	4		3		2		8		17	
CLASS INSTRUCTOR	45.56	15.30	69.40	5.27	53.52	12.37	138.97	128.54	94.66	95.92
TEACHER AIDE	17.03	7.56	8.93	4.17	8.64	7.21	4.87	12.47	8.89	10.43
READING SPECIALIST	48.28	36.52	37.03	19.80	0.0	0.0	24.87	30.65	29.60	30.47
OTHER STAFF	20.42	16.36	64.68	11.19	11.10	2.51	76.42	116.20	53.49	82.21
STAFF SUBTOTAL	131.28	30.09	180.05	38.31	73.27	[illegible].65	245.12	200.39	186.63	140.71
FACILITIES SUBTOTAL	21.65	6.89	39.77	5.43	27.43	5.30	63.39	55.24	45.17	41.21
EQUIPMENT SUBTOTAL	2.26	0.55	3.52	1.05	2.30	0.14	6.13	9.80	4.31	6.75
MATERIALS SUBTOTAL	11.96	8.51	19.06	10.95	15.93	1.05	13.33	4.64	14.33	6.60
DISTRICT CENTER SUBTOTAL	4.76	6.04	17.33	9.24	31.52	36.40	2.80	2.63	9.20	14.34
TOTAL COST	171.91	41.07	259.74	62.67	150.45	30.51	330.78	250.76	259.64	185.26
LOW	133.83		187.57		128.87		143.10		128.87	
1ST QUARTILE	137.84		239.33		139.66		179.94		170.00	
2ND QUARTILE	171.24		291.09		150.45		226.56		187.57	
3RD QUARTILE	205.31		295.82		161.24		347.76		272.43	
HIGH	211.32		300.55		172.02		850.49		850.49	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	1		0		2		5		8	
CLASS INSTRUCTOR	121.33	0.0	0.0	0.0	73.99	45.34	82.35	41.04	85.13	38.52
TEACHER AIDE	29.21	0.0	0.0	0.0	10.95	10.49	0.09	0.20	6.45	11.16
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	18.43	17.56	11.52	16.34
OTHER STAFF	27.71	0.0	0.0	0.0	11.10	2.51	75.92	102.50	53.69	83.50
STAFF SUBTOTAL	178.25	0.0	0.0	0.0	96.05	58.34	176.79	130.83	156.79	113.60
FACILITIES SUBTOTAL	51.92	0.0	0.0	0.0	36.78	21.87	37.81	17.54	39.32	16.44
EQUIPMENT SUBTOTAL	3.79	0.0	0.0	0.0	3.34	0.94	3.35	3.58	3.40	2.73
MATERIALS SUBTOTAL	7.14	0.0	0.0	0.0	16.47	1.64	14.04	4.19	13.78	4.34
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	31.52	36.48	3.25	3.13	9.91	19.36
TOTAL COST	241.09	0.0	0.0	0.0	184.17	119.26	235.24	156.68	223.20	129.02
LOW	241.09		0.0		99.84		106.45		99.84	
1ST QUARTILE	241.09		0.0		142.01		156.88		144.27	
2ND QUARTILE	241.09		0.0		184.17		162.45		201.77	
3RD QUARTILE	241.09		0.0		226.34		250.70		255.15	
HIGH	241.09		0.0		268.50		499.70		499.70	

Table E-42

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 10 FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN----		ALL ----SOURCES----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	2		3		1		7		13	
CLASS INSTRUCTOR	36.66	15.24	84.18	10.13	68.53	0.0	183.89	201.02	129.35	156.17
TEACHER AIDE	25.09	16.56	10.92	1.62	3.54	0.0	7.32	18.15	10.60	15.20
READING SPECIALIST	70.74	43.10	46.13	7.13	0.0	0.0	11.97	15.24	27.97	29.70
OTHER STAFF	22.17	25.02	45.93	15.67	9.33	0.0	67.31	139.09	50.97	101.07
STAFF SUBTOTAL	154.66	18.60	187.17	34.31	81.40	0.0	270.49	329.28	218.90	241.00
FACILITIES SUBTOTAL	17.61	7.90	46.46	6.04	34.33	0.0	84.18	89.81	61.40	69.17
EQUIPMENT SUBTOTAL	1.78	0.79	4.93	1.03	1.30	0.0	3.76	3.64	3.54	2.95
MATERIALS SUBTOTAL	8.25	1.09	19.57	10.05	14.62	0.0	13.60	5.94	14.23	6.92
DISTRICT CENTER SUBTOTAL	9.51	7.06	17.33	9.24	5.73	0.0	2.54	2.73	7.27	7.04
TOTAL COST	191.83	4.01	275.47	53.32	137.38	0.0	374.56	419.56	305.34	309.05
LOW	188.99		230.81		137.38		137.52		137.38	
1ST QUARTILE	190.41		245.95		137.38		206.11		189.12	
2ND QUARTILE	191.83		261.08		137.38		230.67		230.81	
3RD QUARTILE	193.25		297.79		137.38		256.28		261.08	
HIGH	194.67		334.51		137.38		1320.98		1320.98	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	1		0		2		4		7	
CLASS INSTRUCTOR	121.33	0.0	0.0	0.0	73.99	45.34	179.80	124.98	141.21	103.52
TEACHER AIDE	29.21	0.0	0.0	0.0	10.95	10.49	0.0	0.0	7.30	11.76
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER STAFF	27.71	0.0	0.0	0.0	11.10	2.51	80.03	114.52	52.86	87.96
STAFF SUBTOTAL	178.25	0.0	0.0	0.0	96.05	58.34	259.83	226.22	201.38	179.50
FACILITIES SUBTOTAL	51.92	0.0	0.0	0.0	36.78	21.87	78.31	51.95	62.67	42.83
EQUIPMENT SUBTOTAL	3.79	0.0	0.0	0.0	3.34	0.94	5.76	5.67	4.79	4.21
MATERIALS SUBTOTAL	7.14	0.0	0.0	0.0	16.47	1.64	13.66	2.98	13.53	3.82
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	31.52	36.48	2.91	3.50	10.67	20.78
TOTAL COST	241.09	0.0	0.0	0.0	184.17	119.26	360.47	286.48	293.04	225.47
LOW	241.09		0.0		99.84		119.66		99.84	
1ST QUARTILE	241.09		0.0		142.01		170.80		153.76	
2ND QUARTILE	241.09		0.0		184.17		202.01		241.09	
3RD QUARTILE	241.09		0.0		226.34		471.67		322.34	
HIGH	241.09		0.0		268.50		758.18		758.18	

Table E-43

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 10 FOR GRADE 4

	TOTAL -----TITLE I----- MEAN	S.D.	PARTIAL -----TITLE I----- MEAN	S.D.	NON -----TITLE I----- MEAN	S.D.	----UNKNOWN---- MEAN	S.D.	ALL ----SOURCES---- MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	4		3		2		6		15	
CLASS INSTRUCTOR	46.65	24.20	65.24	6.92	54.57	2.06	93.59	84.10	70.20	55.61
TEACHER AIDE	14.93	12.82	9.46	5.70	8.47	6.97	3.80	7.98	8.52	9.36
READING SPECIALIST	48.28	36.52	31.89	20.37	0.0	0.0	27.51	30.86	30.25	31.12
OTHER STAFF	20.33	16.27	80.16	16.77	11.10	2.51	23.82	18.47	32.46	29.00
STAFF SUBTOTAL	130.18	47.40	186.75	45.15	74.14	7.42	148.72	80.44	141.44	65.00
FACILITIES SUBTOTAL	22.47	11.47	36.75	7.64	26.73	1.02	42.31	35.00	33.83	23.40
EQUIPMENT SUBTOTAL	3.00	0.70	1.68	0.37	3.04	0.10	1.92	0.78	2.33	0.87
MATERIALS SUBTOTAL	12.00	8.37	18.96	11.10	15.91	1.03	13.40	5.59	14.47	7.13
DISTRICT CENTER SUBTOTAL	4.76	6.04	17.33	9.24	31.52	36.40	2.96	2.73	10.12	15.06
TOTAL COST	172.40	53.06	261.47	69.96	151.34	43.80	209.32	112.93	202.20	85.97
LOW	123.09		184.21		120.37		119.77		119.77	
1ST QUARTILE	131.10		231.94		135.86		160.37		146.26	
2ND QUARTILE	165.34		279.60		151.34		167.57		182.31	
3RD QUARTILE	206.73		300.10		166.83		199.96		222.53	
HIGH	235.36		320.53		182.31		432.27		432.27	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	0		0		0		5		5	
CLASS INSTRUCTOR	0.0	0.0	0.0	0.0	0.0	0.0	67.36	30.52	67.36	30.52
TEACHER AIDE	0.0	0.0	0.0	0.0	0.0	0.0	0.10	0.23	0.10	0.23
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	22.41	36.41	22.41	36.41
OTHER STAFF	0.0	0.0	0.0	0.0	0.0	0.0	83.30	117.51	83.30	117.51
STAFF SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	173.18	107.30	173.18	107.30
FACILITIES SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	28.58	13.16	28.58	13.16
EQUIPMENT SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	3.37	4.16	3.37	4.16
MATERIALS SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	14.52	6.61	14.52	6.61
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	3.25	3.13	3.25	3.13
TOTAL COST	0.0	0.0	0.0	0.0	0.0	0.0	222.90	114.30	222.90	114.30
LOW	0.0		0.0		0.0		102.55		102.55	
1ST QUARTILE	0.0		0.0		0.0		130.97		130.97	
2ND QUARTILE	0.0		0.0		0.0		197.09		197.09	
3RD QUARTILE	0.0		0.0		0.0		295.11		295.11	
HIGH	0.0		0.0		0.0		388.77		388.77	

Table E-44

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 10 FOR GRADE 6

	TOTAL -----TITLE I----- MEAN	S.D.	PARTIAL -----TITLE I----- MEAN	S.D.	NON -----TITLE I----- MEAN	S.D.	----UNKNOWN---- MEAN	S.D.	ALL ----SOURCES---- MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	4		3		1		6		14	
CLASS INSTRUCTOR	51.74	16.93	57.27	7.99	31.81	0.0	104.55	86.17	74.13	60.96
TEACHER AIDE	17.24	11.66	6.16	4.29	14.28	0.0	7.24	15.35	10.37	12.34
READING SPECIALIST	48.28	36.52	31.89	20.37	0.0	0.0	30.23	33.99	33.58	32.17
OTHER STAFF	20.31	16.15	69.61	24.50	12.88	0.0	66.74	121.55	50.24	80.19
STAFF SUBTOTAL	137.56	34.20	164.93	61.43	58.97	0.0	208.76	155.98	168.32	110.35
FACILITIES SUBTOTAL	23.94	7.04	35.70	6.66	20.94	0.0	46.07	29.54	35.73	21.52
EQUIPMENT SUBTOTAL	1.51	0.87	3.97	2.12	1.51	0.0	6.81	11.47	4.31	7.57
MATERIALS SUBTOTAL	11.88	8.60	18.56	11.94	17.28	0.0	12.98	3.49	14.17	7.17
DISTRICT CENTER SUBTOTAL	4.76	6.04	17.33	9.24	57.32	0.0	3.73	2.35	10.77	15.38
TOTAL COST	179.64	40.81	240.49	89.23	156.02	0.0	278.35	181.86	233.30	120.93
LOW	134.15		137.60		156.02		129.96		129.96	
1ST QUARTILE	150.69		212.32		156.02		146.80		142.21	
2ND QUARTILE	185.05		287.03		156.02		262.29		202.26	
3RD QUARTILE	214.00		291.93		156.02		375.70		268.85	
HIGH	214.33		296.83		156.02		573.75		573.75	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	0		0		0		4		4	
CLASS INSTRUCTOR	0.0	0.0	0.0	0.0	0.0	0.0	59.39	38.31	59.39	38.31
TEACHER AIDE	0.0	0.0	0.0	0.0	0.0	0.0	0.10	0.21	0.10	0.21
READING SPECIALIST	0.0	0.0	0.0	0.0	0.0	0.0	30.30	43.82	30.30	43.82
OTHER STAFF	0.0	0.0	0.0	0.0	0.0	0.0	76.47	100.39	76.47	100.39
STAFF SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	166.28	178.10	166.28	178.10
FACILITIES SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	31.57	17.42	31.57	17.42
EQUIPMENT SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	2.13	2.88	2.13	2.88
MATERIALS SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	13.88	4.56	13.88	4.56
DISTRICT CENTER SUBTOTAL	0.0	0.0	0.0	0.0	0.0	0.0	4.06	2.94	4.06	2.94
TOTAL COST	0.0	0.0	0.0	0.0	0.0	0.0	217.93	199.03	217.93	199.03
LOW	0.0		0.0		0.0		99.46		99.46	
1ST QUARTILE	0.0		0.0		0.0		110.31		110.31	
2ND QUARTILE	0.0		0.0		0.0		128.51		128.51	
3RD QUARTILE	0.0		0.0		0.0		236.12		236.12	
HIGH	0.0		0.0		0.0		515.23		515.23	

Table E-45

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER11 FOR ALL GRADES

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	5		2		5		9		21	
CLASS INSTRUCTOR	112.73	63.61	90.36	58.40	59.38	22.52	104.36	74.08	94.31	60.94
TEACHER AIDE	16.83	22.02	25.52	20.36	3.08	3.36	9.21	17.04	11.12	16.82
READING SPECIALIST	9.53	21.31	0.0	0.0	16.89	17.22	12.01	19.89	11.44	18.16
OTHER STAFF	8.85	5.78	11.63	12.02	19.59	12.39	17.03	8.39	15.18	9.51
STAFF SUBTOTAL	147.94	55.98	127.50	26.02	98.94	26.67	142.60	68.24	132.04	55.27
FACILITIES SUBTOTAL	49.85	25.08	46.58	38.21	29.31	11.93	47.11	28.86	43.47	25.05
EQUIPMENT SUBTOTAL	1.98	0.89	2.82	0.93	2.26	0.91	3.53	1.90	2.79	1.51
MATERIALS SUBTOTAL	11.53	4.64	9.05	10.99	9.49	3.56	10.92	3.88	10.55	4.44
DISTRICT CENTER SUBTOTAL	1.95	4.20	0.0	0.0	6.36	9.98	5.45	9.64	4.31	8.09
TOTAL COST	213.25	87.59	185.96	52.32	146.36	38.97	209.61	96.51	193.17	80.47
LOW	131.39		148.96		88.36		78.13		78.13	
1ST QUARTILE	166.93		167.46		142.40		161.31		149.07	
2ND QUARTILE	168.11		185.96		149.07		175.62		168.11	
3RD QUARTILE	251.00		204.46		154.37		230.59		222.96	
HIGH	348.81		222.96		197.58		424.25		424.25	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	3		2		2		8		15	
CLASS INSTRUCTOR	83.07	32.20	64.31	10.46	137.31	104.76	55.67	14.99	73.19	42.98
TEACHER AIDE	3.50	3.99	33.51	46.45	0.0	0.0	1.02	2.30	5.71	16.96
READING SPECIALIST	15.88	27.51	0.0	0.0	0.0	0.0	4.93	13.94	5.80	15.40
OTHER STAFF	9.98	8.11	11.63	12.02	23.69	6.88	17.46	7.90	16.02	8.63
STAFF SUBTOTAL	112.43	26.97	109.46	68.94	161.00	111.64	79.09	25.48	100.72	49.85
FACILITIES SUBTOTAL	39.33	9.41	36.83	14.71	66.17	54.67	25.58	5.12	35.25	21.18
EQUIPMENT SUBTOTAL	0.83	0.38	2.89	3.49	4.32	5.03	1.86	1.06	2.12	2.10
MATERIALS SUBTOTAL	9.27	4.33	10.00	10.91	6.35	3.15	11.71	4.59	10.28	5.10
DISTRICT CENTER SUBTOTAL	3.24	5.38	0.0	0.0	12.66	15.64	6.13	10.07	5.61	9.23
TOTAL COST	165.11	31.98	159.17	98.05	250.51	190.12	124.37	31.03	153.98	75.88
LOW	141.57		89.84		116.07		75.29		75.29	
1ST QUARTILE	146.95		124.50		183.29		96.70		106.71	
2ND QUARTILE	152.33		159.17		250.51		133.92		141.57	
3RD QUARTILE	176.87		193.83		317.73		150.27		155.44	
HIGH	201.41		228.50		384.95		158.56		384.95	

Table E-46

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 11 FOR GRADE 2

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS NO. OF SCHOOLS	4		2		5		9		20	
CLASS INSTRUCTOR	110.94	46.01	50.19	0.52	59.01	22.41	110.46	84.15	91.67	64.25
TEACHER AIDE	24.97	33.42	30.38	29.21	3.26	4.78	9.06	17.11	12.92	21.06
READING SPECIALIST	11.91	23.82	0.0	0.0	29.55	38.27	12.01	19.89	15.17	25.50
OTHER STAFF	8.97	6.61	11.63	12.02	19.55	12.49	17.77	9.82	15.84	10.25
STAFF SUBTOTAL	156.79	70.17	92.20	40.71	111.38	41.02	149.29	78.27	135.61	65.84
FACILITIES SUBTOTAL	50.70	21.90	23.19	2.65	28.76	9.84	49.99	32.51	42.15	25.91
EQUIPMENT SUBTOTAL	2.79	1.97	2.62	2.12	2.40	1.13	3.58	1.84	3.03	1.68
MATERIALS SUBTOTAL	10.30	4.79	7.78	7.53	9.60	3.73	11.00	3.80	10.19	4.08
DISTRICT CENTER SUBTOTAL	0.07	0.14	0.0	0.0	6.36	9.98	5.45	9.64	4.06	8.21
TOTAL COST	220.66	95.26	125.80	47.71	158.51	42.17	219.32	189.42	195.03	90.78
LOW	159.13		92.07		90.93		60.05		60.05	
1ST QUARTILE	173.79		108.94		148.43		166.40		156.45	
2ND QUARTILE	180.38		125.80		168.37		180.57		175.77	
3RD QUARTILE	227.24		142.67		187.27		267.98		202.05	
HIGH	362.74		159.54		197.52		424.25		424.25	
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	3		2		1		4		10	
CLASS INSTRUCTOR	92.21	30.02	71.87	0.21	211.39	0.0	67.91	42.83	90.36	52.35
TEACHER AIDE	6.44	6.00	33.30	46.75	0.0	0.0	1.64	3.27	9.22	20.52
READING SPECIALIST	15.88	27.51	0.0	0.0	0.0	0.0	0.0	0.0	4.77	15.07
OTHER STAFF	10.14	8.37	11.63	12.02	28.55	0.0	17.48	6.36	15.21	8.86
STAFF SUBTOTAL	124.67	8.85	116.80	58.55	239.94	0.0	87.02	46.49	119.56	56.66
FACILITIES SUBTOTAL	42.78	7.83	40.25	9.87	104.83	0.0	30.37	14.76	43.51	24.38
EQUIPMENT SUBTOTAL	0.83	0.17	3.03	3.30	7.88	0.0	1.44	0.15	2.22	2.42
MATERIALS SUBTOTAL	9.33	4.25	10.08	10.79	8.58	0.0	11.92	3.49	10.44	4.78
DISTRICT CENTER SUBTOTAL	3.24	5.38	0.0	0.0	23.72	0.0	4.39	7.07	5.10	8.29
TOTAL COST	180.85	21.65	170.16	82.51	384.95	0.0	135.15	57.79	180.84	86.93
LOW	156.77		111.81		384.95		75.18		75.18	
1ST QUARTILE	171.92		140.98		384.95		93.44		123.05	
2ND QUARTILE	187.67		170.16		384.95		132.67		176.44	
3RD QUARTILE	192.89		199.33		384.95		174.37		199.73	
HIGH	198.71		228.50		384.95		200.07		384.95	

Table E-47

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 11 FOR GRADE 4

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	5		2		5		8		20	
CLASS INSTRUCTOR	82.90	38.68	108.80	70.56	70.06	37.78	108.77	72.49	92.63	55.76
TEACHER AIDE	13.88	15.63	33.44	30.91	2.91	2.85	4.45	8.31	9.32	14.71
READING SPECIALIST	9.53	21.31	0.0	0.0	3.19	7.12	7.14	14.44	6.04	13.89
OTHER STAFF	8.77	5.75	11.63	12.02	19.66	12.25	15.55	7.62	14.49	9.19
STAFF SUBTOTAL	115.09	31.39	153.86	27.63	95.81	36.84	135.92	71.74	122.48	53.02
FACILITIES SUBTOTAL	36.88	14.24	56.38	47.24	35.51	21.74	48.46	28.09	43.12	24.62
EQUIPMENT SUBTOTAL	1.32	0.35	3.77	1.77	2.44	0.99	3.56	2.08	2.74	1.71
MATERIALS SUBTOTAL	11.24	4.20	9.01	11.48	10.20	4.14	11.74	3.01	10.96	4.29
DISTRICT CENTER SUBTOTAL	1.95	4.20	0.0	0.0	6.36	9.97	2.67	5.13	3.14	6.21
TOTAL COST	166.47	48.61	223.03	61.61	150.32	67.64	202.35	102.62	182.44	78.86
LOW	106.80		179.46		91.64		93.69		91.64	
1ST QUARTILE	148.60		201.24		103.67		148.54		131.50	
2ND QUARTILE	156.81		223.03		121.98		177.82		177.77	
3RD QUARTILE	183.80		244.81		178.77		209.06		201.55	
HIGH	237.94		266.59		255.52		424.24		424.24	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	3		1		1		7		12	
CLASS INSTRUCTOR	88.94	65.06	46.97	0.0	63.24	0.0	54.11	19.51	62.98	35.14
TEACHER AIDE	4.16	4.11	0.95	0.0	0.0	0.0	1.38	2.56	1.92	2.93
READING SPECIALIST	15.88	27.51	0.0	0.0	0.0	0.0	5.63	14.90	7.26	17.04
OTHER STAFF	10.30	8.62	3.13	0.0	18.82	0.0	18.58	7.30	15.24	8.42
STAFF SUBTOTAL	119.28	70.69	51.06	0.0	82.06	0.0	79.70	23.65	87.40	40.63
FACILITIES SUBTOTAL	43.45	22.74	21.91	0.0	27.52	0.0	24.36	5.81	29.19	13.70
EQUIPMENT SUBTOTAL	0.72	0.64	0.25	0.0	0.77	0.0	2.13	1.63	1.51	1.46
MATERIALS SUBTOTAL	9.41	4.63	2.17	0.0	4.13	0.0	10.81	3.52	9.18	4.37
DISTRICT CENTER SUBTOTAL	3.24	5.38	0.0	0.0	1.60	0.0	7.01	10.54	5.03	[illegible]
TOTAL COST	176.10	86.54	75.39	0.0	116.07	0.0	124.01	30.03	132.32	52.33
LOW	96.99		75.39		116.07		75.29		75.29	
1ST QUARTILE	129.88		75.39		116.07		112.79		108.13	
2ND QUARTILE	162.77		75.39		116.07		118.66		117.37	
3RD QUARTILE	215.65		75.39		116.07		139.13		151.75	
HIGH	268.53		75.39		116.07		178.25		268.53	

Table E-48

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 11 FOR GRADE 6

	TOTAL -----TITLE I----		PARTIAL -----TITLE I----		NON -----TITLE I----		----UNKNOWN-----		ALL ----SOURCES-----	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
COMPENSATORY READING PROGRAMS										
NO. OF SCHOOLS	4		1		4		3		12	
CLASS INSTRUCTOR	130.12	117.56	40.72	0.0	45.19	18.19	83.54	17.71	82.72	73.53
TEACHER AIDE	7.36	9.68	22.49	0.0	3.21	2.27	0.0	0.0	5.40	8.04
READING SPECIALIST	11.91	23.02	0.0	0.0	3.98	7.97	13.14	22.76	8.58	17.04
OTHER STAFF	9.37	6.57	20.13	0.0	19.78	14.39	21.57	7.99	16.79	10.51
STAFF SUBTOTAL	158.76	104.69	83.35	0.0	72.16	19.26	118.25	5.81	113.48	67.46
FACILITIES SUBTOTAL	55.11	45.95	16.01	0.0	24.73	10.38	34.53	6.17	36.58	28.77
EQUIPMENT SUBTOTAL	1.64	1.01	1.94	0.0	1.89	1.13	2.26	1.01	1.90	0.93
MATERIALS SUBTOTAL	10.94	5.36	18.20	0.0	8.98	2.32	11.15	4.38	10.95	4.36
DISTRICT CENTER SUBTOTAL	2.43	4.68	0.0	0.0	7.55	11.10	1.64	1.92	3.74	6.97
TOTAL COST	228.87	160.07	119.49	0.0	115.32	39.72	167.84	8.36	166.65	100.00
LOW	131.02		119.49		83.13		159.33		83.13	
1ST QUARTILE	150.80		119.49		94.64		163.73		116.26	
2ND QUARTILE	158.13		119.49		102.52		168.14		157.83	
3RD QUARTILE	237.01		119.49		123.20		172.09		169.38	
HIGH	468.20		119.49		173.09		176.04		468.20	
DEVELOPMENTAL READING PROGRAMS										
NO. OF SCHOOLS	3		0		0		5		8	
CLASS INSTRUCTOR	45.42	20.12	0.0	0.0	0.0	0.0	67.10	15.98	58.97	19.68
TEACHER AIDE	0.10	0.17	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.10
READING SPECIALIST	15.88	27.50	0.0	0.0	0.0	0.0	7.89	17.63	10.88	20.27
OTHER STAFF	9.21	6.98	0.0	0.0	0.0	0.0	21.50	12.49	16.89	11.97
STAFF SUBTOTAL	70.60	28.80	0.0	0.0	0.0	0.0	96.49	27.06	86.78	28.92
FACILITIES SUBTOTAL	24.01	5.72	0.0	0.0	0.0	0.0	29.40	6.47	27.38	6.41
EQUIPMENT SUBTOTAL	0.82	0.28	0.0	0.0	0.0	0.0	2.14	0.88	1.65	0.97
MATERIALS SUBTOTAL	9.11	4.12	0.0	0.0	0.0	0.0	10.71	5.83	10.11	5.00
DISTRICT CENTER SUBTOTAL	3.24	5.38	0.0	0.0	0.0	0.0	6.53	11.95	5.30	9.63
TOTAL COST	107.78	24.15	0.0	0.0	0.0	0.0	145.27	34.22	131.21	34.82
LOW	79.99		0.0		0.0		97.34		79.99	
1ST QUARTILE	99.85		0.0		0.0		125.61		114.12	
2ND QUARTILE	119.72		0.0		0.0		155.29		124.62	
3RD QUARTILE	121.67		0.0		0.0		163.07		157.24	
HIGH	123.63		0.0		0.0		185.05		185.05	

Table E-49

STUDY OF COMPENSATORY READING PROGRAMS
SUMMARY OF AVERAGE READING COSTS PER STUDENT
FOR SCHOOLS IN CLUSTER 12

	----GRADE 2-----		----GRADE 4-----		----GRADE 6-----		---ALL GRADES---	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
DEVELOPMENTAL READING PROGRAMS NO. OF SCHOOLS	41		37		32		45	
CLASS INSTRUCTOR	69.84	33.46	62.01	24.24	50.87	21.26	62.52	26.21
TEACHER AIDE	9.47	14.43	6.06	9.80	7.05	13.70	7.58	12.03
READING SPECIALIST	17.03	26.70	13.77	24.28	14.03	30.63	16.90	23.47
OTHER STAFF	18.15	16.23	17.91	16.70	15.09	18.23	17.45	13.70
STAFF SUBTOTAL	114.49	53.12	99.76	47.16	87.03	45.51	104.46	46.59
FACILITIES SUBTOTAL	35.21	18.16	30.85	13.04	23.92	9.05	31.09	14.62
EQUIPMENT SUBTOTAL	4.14	2.47	3.36	3.04	2.65	1.67	3.31	1.87
MATERIALS SUBTOTAL	13.47	7.08	13.17	6.73	12.67	7.53	12.97	6.48
DISTRICT CENTER SUBTOTAL	2.90	6.80	3.58	7.27	4.20	7.77	3.14	6.77
TOTAL COST	170.20	69.07	150.72	58.58	130.47	52.96	154.97	59.77
LOW	67.86		72.94		50.81		64.94	
1ST QUARTILE	121.86		102.53		97.34		115.64	
2ND QUARTILE	150.08		130.07		117.25		149.19	
3RD QUARTILE	204.37		173.32		150.98		173.11	
HIGH	408.76		313.51		265.77		408.76	